

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper Second-class postage paid at Framingham, Mass., and additional mailing offices ©1981 by CW Communications, Inc.

Vol. XV, No. 9

March 2, 1981

\$1.25 a copy; \$36/year



Officials at Eniac unveiling, left to right: J. Presper Eckert Jr., chief engineer; Prof. J.G. Brainerd, supervisor; Sam Feltman, chief engineer for ballistics, Ordnance Department; Capt. H.H. Goldstine, liaison officer; Dr. J.W. Mauchly, consulting engineer; Dean Harold Pender, Moore School of Electrical Engineering, University of Pennsylvania; General G.M. Barnes, chief of the Ordnance Research and Development Service; Col. Paul N. Gillon, chief, Research Branch of the Army Ordnance Research and Development Service.

First Large-Scale Computer, Eniac, Turns 35 Years Old

By Lois Paul
CW Staff

PHILADELPHIA — Although there was no ice cream and cake, a birthday was celebrated here this week as Eniac (Electronic Numerical Integrator and Computer), the world's first large-scale computer, turned 35.

Eniac was built for the Army during World War II at the Moore School of the University of Pennsylvania School of Engineering and Applied Science. It weighed 30 tons, took up 15,000 sq ft of space and cost \$400,000 to build in 1945. Its 18,000 vacuum tubes consumed 150 kilowatts and it could do 5,000 calculations per second.

One of the two men credited with its creation, J. Presper Eckert Jr., described Eniac in a recent interview as "the equivalent to a simple Radio Shack computer of the type that sells for \$500."

However, during the celebration of Eniac's anniversary this week, University of Pennsylvania students proved that even a Radio Shack Corp. TRS-80

can beat the old veteran. Using sections of the original Eniac and a TRS-80, the students ran a program to square all integers from one to 10,000. Eniac suffered a crushing defeat, com-
(Continued on Page 4)

Simon Views Computers Lending New Perspectives

By Molly Upton
Special to CW

SAN FRANCISCO — "The largest impact of the computer revolution may be on our views of ourselves," Dr. Herbert Simon told the IEEE Computer Society's Spring Computer Conference (Compcon) here last week.

In a special address titled "Prometheus or Pandora: The Influence of Automation on Society," Simon stressed to the audience of engineers that "technology is not some exogenous variable imposed on us; we de-

Four DPS 8s Added To Honeywell CP-6 Line

By Tim Scannell
CW Staff

WALTHAM, Mass. — Honeywell, Inc. has added four DPS 8 large-scale host computers to its CP-6 multiuser systems family that are said to be able to handle up to 120 simultaneous users.

The DPS 8/62C, the DPS 8/44C single and dual processors and the DPS 8/20C are all geared for high-production on-line environments. The central systems all include user storage, an integrated communications processor based on recently announced Datanet 8 hardware, a remote diagnostics processor, cache memory and an operator's console.

The four additions bring to seven the number of CP-6 host systems introduced by Honeywell since 1978. All of the systems are aimed at current users of Xerox Corp.'s CP-V and Honeywell's similar-in-nature CP-6 operating systems. The CP-6 operating system was developed by Honeywell in 1978 as a migration path for CP-V users, about two years after the firm

assumed responsibility for Xerox's computers and user base, a spokesman said.

Other CP-6 host systems include the top-of-the-line DPS 8/70C, introduced last June, and the Level 66/DPS/C and 66/DPS/B, which were introduced in 1978 and 1979, respectively.

The DPS 8/62C is a 120-user, single-processor system based on the top-of-the-line model's technology and is field-upgradeable to the 8/70C. The system reportedly offers approximately 30% more power than a comparably configured Level 66/DPS/C.

The DPS 8/62C consists of a CPU, a system control unit (SCU) and one I/O multiplexer (IOM) with 35 channel function slots, expandable to 54.

Typical Configuration

In a typical configuration, made up of a Datanet 8C front-end network processor (FNP), 120 communications lines, a 1,200 line/min printer, a 1,600 line/min printer, a 1,050 card/min card reader, four 200 in./sec tape drives and nearly 3G bytes of disk storage, costs \$1,681,287. Monthly maintenance charges are \$7,713, and monthly rental charges under a five-year contract are \$49,598.

The DPS 8/44C single processor is a 40-user system with about 75% of the power of a Level 66/DPS/B. However, the dual-processor configuration, the 8/44C, has up to 76% more power than the single processor and can accommodate up to 80 simultaneous users.

The DPS 8/44C central system consists of one or two CPUs, one SCU and one IOM with 19 channel function slots. A typical single-processor configuration consists of a Datanet FNP with 40 lines, a 1,200 line/min printer, a 500 card/min card reader, two tape drives and 1.2G bytes of disk storage.
(Continued on Page 6)

MIS Exec Faces Barrage of New Technology

By Jeffrey Beeler
CW West Coast Bureau

SAN FRANCISCO — Lynn Hazlett still likes to tell the story about one of his experiences during the Vietnam War. The incident in question took place while Hazlett was still a career officer in the U.S. Navy, which at the time was operating a data center in the South Vietnamese city of Da Nang.

The center sat smack in the middle of the war zone, and although the Navy did everything it could to provide protection, security at the installation was sometimes — well, less than ideal.

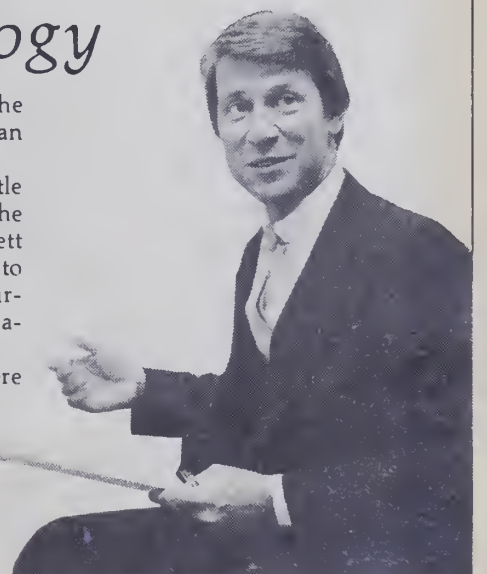
One day the Viet Cong attacked and leveled the data center with rocket fire. Soon, a replacement facility was ordered built, and responsibility for the project was handed to Hazlett, then a Navy computing specialist.

Hazlett, now 44, still recalls that assignment vividly and

regards his successful completion of the task as one of the "most unique" professional experiences in his more than 20 years in computing.

Today, of course, Hazlett's days in Vietnam are little more than a distant memory, and so is his career in the Navy. In 1978, after two decades of active duty, Hazlett traded his "Navy blues" for a business suit and went to work for Levi-Strauss International, Inc., where he currently serves as vice-president of management information systems (MIS).

In at least one sense, then, Hazlett's current duties here and his former responsibilities in Vietnam would seem to be almost totally unrelated to one another. But in another, deeper sense, Hazlett's military past closely parallels his civilian present. Just as Hazlett was once called upon to cope with the after-
(Continued on Page 8)





For MIS Managers Need for Capacity Planning Stressed

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Second-class postage paid at Framingham, Mass., and additional mailing offices PN127420. *Computerworld* (ISSN-0010-4841) is published weekly, except: semiweekly the third week in March and a single combined issue the last week in December and the first week in January by CW Communications Inc., Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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\$1.25 a copy: U.S. — \$36 a year; Canada, Central & So. America — \$65 a year; Europe and Near East — \$125 a year; other foreign — \$175 a year (airmail service). Four weeks notice is required for change of address. Please allow six weeks for new subscription service to begin.

Computerworld can be purchased on 35 mm microform through University Microfilm Int., Periodical Entry Dept., 300 Zeeb Rd., Ann Arbor, Mich. 48106. Phone: (313) 761-4700. *Computerworld* is indexed: write to Circulation Dept. for subscription information.

POSTMASTER: Send Form 3579 (Change of Address) to *Computerworld* Circulation Dept., Box 880, 375 Cochituate Road, Framingham, MA 01701.

By Ann Dooley
 CW Staff

PHOENIX — MIS managers must come to grips with capacity planning in order to provide acceptable, consistent and inexpensively priced end-user service.

As the work load grows and new software and hardware techniques appear on the horizon, the task will grow more difficult, according to Leonard Lipner, vice-president for BGS Systems, Inc. of Lincoln, Mass. Speaking at the 1981 Conference on EDP Performance Management here, Lipner outlined the standard capacity planning activities currently occurring in many DP installations.

An MIS manager must identify and characterize work loads as a first step in capacity planning, Lipner noted. Next, a manager should set service objectives, forecast work load growth or other changes, assess new technologies, predict levels of end-user service associated with each future scenario and prepare a hardware/software migration plan, both for himself and for top management.

According to Lipner, a good working relationship must be established among the many units in a DP environment. These units may be as diverse as technical services, data base design, systems design, work load forecasting and data center operations. After a relationship has been established, capacity planning can begin, he told the audience.

Managers must realize that the final level of performance will be affected by decisions made throughout the DP organization. For instance, data base structure, business volumes, data base reorganizations and concurrent work loads are interrelated and will impact

on each other, he warned. Organizing a capacity planning program will also involve highlighting the need for a performance assurance function, crossing organizational boundaries.

Program Implementation

When implementing a capacity planning program, managers must also institute educational and behavioral programs among the staff and the management. For the project to gain acceptance, managers must work to incorporate it into the project review and the development methodology activity, according to Lipner.

Commitment must also be obtained, especially from top management who will then pass the word along that the program is to be accepted. To achieve the necessary commitment, managers can institute a kickoff meeting to function as an awareness program for capacity planning.

Initial cycles should be instituted, including forecasting and service level adjustments, he said. Lipner also told the assembled managers to establish definitions of key terms and to implement multilevel reviews and technology updates.

Managers must recognize and address the technical issues by searching out the possible bottlenecks in hardware or software, he said. Possible strategies must be planned to avoid performance shortfalls in areas like hardware upgrade, off-loading, system tuning, system redesign and operations options.

In addition, managers must develop and maintain profiles of do's and don't's used in other capacity planning studies, according to Lipner.

Managers must realize that ongoing

capacity planning must dovetail with other planning activities in the organization, Lipner noted. Such activities might include long- and short-range business plans and information systems plans, project planning, budgets, DP staffing and end-user staffing.

The capacity planner must supervise setting and implementing a realistic schedule, highlight assumptions based on current timing constraints and participate in project milestone reviews, Lipner told the audience.

Exhibiting At NCC?

FRAMINGHAM, Mass. — *Computerworld* is planning to devote three issues to the 1981 National Computer Conference (NCC), slated for May 4-7 in Chicago. The first of these issues will include an "NCC Preview" section in which we let our readers know what products, new and old, vendors will be exhibiting.

To ensure that all products and services displayed at NCC receive proper coverage, we ask that all NCC exhibitors send us all pertinent information no later than April 1. Press packages should include prices and availability dates, as well as the name and phone number of a contact person acquainted with the product or service.

Information must be received by April 1 by the NCC Products Editor at *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.

This Week

NEWS	SOFTWARE & SERVICES
AT&T Trial to Start Soon 4	Flexibility Key to Structured Workshops 43
GAO Seeks Federal Management Guidelines 5	MSA Updates Accounting to FASB 33 Guides 46
IEEE Plays It Safe With Two Net Standards 6	Lehigh Announces 'DSS/2' Update 47
IBM Develops Prototype Logic Circuitry 7	Financial Accounting Tools Geared to TI DS990s 48
Doll Predicts 8100's Role as Showcase Processor 8	Audit, Data Base Course Offered 51
IDC Finds Little DBMS Use 10	Financial Modeling System Runs on Prime 52
NYIT Ex-Directors Charged With Time Theft 12	COMMUNICATIONS
Doing Homework Saves Energy 13	Dutch Protocol Converter Fits IBM Users 53
Mnemonic Plague MIS-tifies Sons of Glitches 14	Data-Doc Designed for Trouble Shooting 54
Zero-Based Plan Predicts Impacts of Cutbacks 15	Gandalf Fiber-Optics Include Modems, Mux 55
White-Collar Productivity Viewed at Cusp 16	SYSTEMS & PERIPHERALS
Education Gap Held U.S.' Top Security Threat 17	DDP Seen Coming of Age Despite Resistance 57
State of Science Ed Viewed Crippling U.S 18	Access Model Secures Terminals 58
'Me Generation' a Challenge to Managers 20	Illinois Recovery Center to Open 59
Prevention Recommended to Avoid EEO Suits 21	MINIWORLD
Turnaround Time 22	Datapoint Boosts 1500's Speed, Memory 61
Most Precious Metals Lead Two Lives 24	Xmark Offers Upgrades for Office Systems Lines 62
Precious Metals Seen Tied to Hostile Nations 25	COMPUTER INDUSTRY
DG Moves Into Graphics With Dasher G300 26	Hitachi Expands Plug-Compatible M Series 63
Insurer Sets Mark on 'Stag' for Claims Work 27	Intel Sues To Halt Use of Trade Secrets 63
Michigan Firms Sue Systems House, Qantel 28	Company to Provide Lease Financing Programs 64
Soviet Emigres Provide Plentiful Work Force 29	HP Eyeing Mainframe Manufacture in Mexico 65
FCC Inquiry to Scrutinize Bell R&D Setup 30	DG Forms Group for Corporate R&D 66
Bank Scoffs at Report Tying Heist to DP Fraud 32	U.S. Agencies Seen Ignorant of Microelectronics 67
FCC Implements Tariff for Dataspeed 4540 33	Meet to Cover Effects of Japanese DP Invasion 68
EDITORIAL	Sorbus Opens Repair Shops 72
Editorial: Not for Men Only 36	ADVERTISING INDEX 112
Not So Basic Anymore 37	
History Shouldn't Hold Us Back 37	
Were You Cut Out for Management? 37	
Human Connection: Computer Center a Success 41	

WHO DUNIT

Sortland Yard warns against "Raffles-type sort programs."

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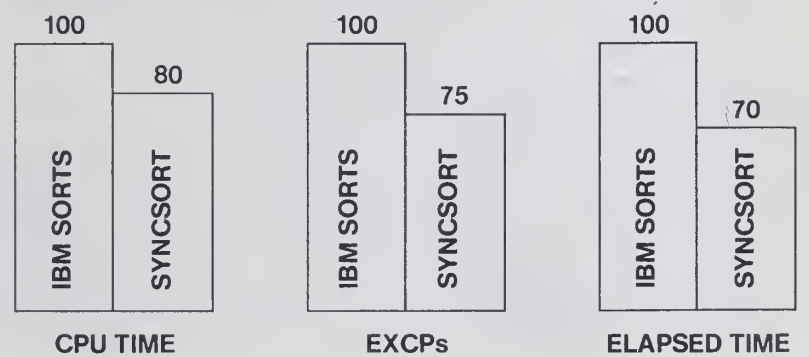
In an extraordinary move, Sortland Yard today warned data processors throughout the world to be on guard against what it termed "gentleman-bandit sort programs."

The warning was issued by one of the Yard's best known figures, Inspector SyncSort, who has sometimes been called "a legend in his own CPU time."

The inspector said, "One of the difficulties in apprehending these chaps is that they look so eminently respectable. They're members of a fine old hardware family. They've been to the right schools. And they invariably carry out their burglaries while wearing a dinner jacket from Saville Row."

EXPERT COMPUTER CRACKERS. "But once the party is underway," the inspector said, "these chaps head straight for the place where the family jewels are kept. They can crack open a computer and make off with a king's ransom in computer resources before you can say 'Hound of the Baskervilles.'"

To indicate "the true cost of this sort of misbehavior," the inspector released the following crime statistics:



SOMETIMES TAKE HOSTAGES. The inspector noted that these black-sheep programs often "take a dreadful toll" of programmers. "They are often tied up for days on end and forced to perform unnecessary coding, compiling and debugging. And they are heartlessly deprived of the labor-saving features that are taken for granted in most parts of the civilized sorting world."

Among these the inspector listed:

- INCLUDE/OMIT — chooses records to be sorted.
- SUM — summarizes designated numeric fields.
- INREC/OUTREC — reformats records on input and output.
- OUTFIL Report Writer — produces reports with headings, pagination and dating.

TELEPHONE BEST DEFENSE. The inspector urged data processors to call the Yard immediately if they suspect their center is infested by a Raffles-type sort program. "The number is (201) 568-9700. We'll send over one of our highly trained sort detectives to track the culprit down."

Questioned as to what would be done with sort programs caught burglarizing computer centers, the inspector replied, "They will be given a just and speedy trial. If found guilty, they will immediately be transported to Iran!"

AT&T Trial to Start Soon, Consent Decree Efforts Fail

By Phil Hirsch

CW Washington Bureau

WASHINGTON, D.C. — The antitrust trial of the century — between AT&T and the Justice Department — probably will begin here this week, after 11th-hour efforts to negotiate a consent decree broke down.

Start of the trial can still be delayed by presiding Judge Harold Greene, but it is not likely in view of his earlier statement that unless government and AT&T attorneys could come up with a consent decree by March 2, the trial would begin two days later.

Last Monday, in a letter to Judge Greene, the head of the Justice Department's antitrust division, Sanford M. Litvack, indicated the two sides were still far apart. "In my view, it is extremely doubtful" an agreement will be reached by the March 2 deadline, he said.

Even if such an agreement were reached, Litvack added, the Reagan administration would not be able to approve it by that date, as required by Judge Greene in his earlier order.

To avoid possible conflict of interest charges, the new attorney general, William French Smith, and his deputy, Edward Schmultz, have announced they will not participate in the case. That leaves it up to William F. Baxter, who is the President's choice to succeed Litvack as head of the Justice

Department's antitrust division. But Baxter will not be able to review any proposed settlement of the case until after March 2, Litvack told Greene.

AT&T took a somewhat different view of the negotiations, in a letter it sent to Judge Greene.

Until informed of Litvack's doubts, said AT&T general counsel Howard Triens, the phone company was "confident" that negotiations could be completed "within a matter of days, and were prepared today [Feb. 23] to do just that."

Later, a company spokesman added "we are fully prepared to resume the litigation." However, "the beginning of trial will present us with an altogether new set of circumstances."

Hearings Slated on Bell Home Experiment

By Marguerite Zientara

CW Staff

AUSTIN, Texas — In a dramatic turnaround, the Texas Public Utilities Commission (PUC) voted last week to hold public hearings on Southwestern Bell's proposed experimental home and business electronic information system [CW, Dec. 15] and to block the project until those hearings are completed.

The decision, which AT&T must appeal by Wednesday at the latest, would

WASHINGTON, D.C. — AT&T last week asked the Federal Communications Commission (FCC) to increase the company's rate of return to 13% — an action that would raise rates for voice and data communications services significantly.

Early last month, an FCC trial examiner recommended a 10.87% rate of return. The presently authorized return is 10.5%.

Bell said the recommended increase is "grossly inadequate." The company asked also for expedited consideration of its latest petition.

In an accompanying letter, Vice-President James Billingsley said that because of accelerating inflation, "our situation is critical." Because alternative investments — such as six-month

savings certificates — return "as much as 18%," Bell will have trouble, in the absence of a higher rate of return, in attracting the \$6 billion in new capital it needs this year.

"Recently, new Bell System long-term debt has cost well in excess of 14%," Billingsley added. "This is for triple-A rated bonds. At the same time, high interest rates have caused our current post-tax interest coverage to drop to about 2.8 times, and coverage is trending downward."

"Rating agencies tell us that unless we can raise our coverage, at a minimum, to between 3 and 3.25 times reasonably soon, we face a downgrading of our bonds. If this happens, our debt costs will go even higher," he said.

halt — at least temporarily — the firm's Electronic Information Service designed to transmit free classified, display and catalog advertising to about 600 homes and 50 businesses in the Austin area.

Originally slated to begin in mid-1981, the service was initially given the go-ahead by the three-member PUC without a public hearing as it has "routinely done on hundreds of other tariff changes," PUC member Moak Rollins said last December.

That "almost automatic" approval was the partial basis for the Texas Daily Newspaper Association (TDNA) request that Bell's tariff be removed pending public hearings. TDNA claimed that the test would give AT&T an "unfair advantage" in developing services that are directly competitive with newspapers and other publications.

The basic point of contention is "whether or not an information carrier, which by definition has an outright monopoly on the phone lines going into every house and every establishment in a given area, should also be the information provider," according to Philip J. Meek, president and editorial chairman of the *Fort Worth Star-Telegram* and chairman of TDNA's telecommunications task force.

Of last week's ruling, Meek said, "We're very pleased the PUC has agreed with us that the whole question

should be aired in detail, and whether or not AT&T and Southwestern Bell should continue should be decided on the complete merits of the situation."

Consolidated into a single case along with the TDNA complaint was a complaint filed last Monday against Southwestern Bell by Datapoint Corp. of San Antonio, Texas, manufacturer of computer hardware and telecommunications equipment.

"Our concern is that AT&T would use its monopoly power in a way that would not be beneficial to the development of the data processing equipment and services markets and telecommunications equipment markets," explained Dick Brown, Datapoint's general counsel.

Brown expressed concern that AT&T would violate the orders of the Federal Communications Commission's (FCC) Second Computer Inquiry that any new enhanced services must be offered through separate subsidiaries and that AT&T "would simply somehow try to use the fact that they are the phone company to dominate these markets, not as a result of any superior product or innovation, but simply because of . . . [their] power."

AT&T was "very upset and surprised" by the ruling, according to company spokesman Ed Langsam, and last week began examining alternatives, "legal and otherwise."

First Large-Scale Computer, Eniac, Turns 35 Years Old

(Continued from Page 1)

pleting the task in six seconds to the TRS-80's one-third of a second.

Eckert, who at 61 is a vice-president of Sperry Univac in suburban Montgomery County, built Eniac with Dr. John Mauchly, who was a physicist at Ursinus College when they met. With the nation at war, Mauchly suggested in 1942 that research be conducted on an electronic computer.

Needing a device to speed calculations required to improve the accuracy of artillery, the Army Ballistics Research Laboratory in Aberdeen, Md., approved the project in 1943. Three years later, Eckert and Mauchly completed Eniac and it was moved to Aber-

deen and used there for about two years.

Eckert and Mauchly formed Eckert-Mauchly Computer Corp., which was bought in 1950 by Remington Rand. This later became the Sperry Univac division of Sperry Corp. Eckert said that he and Mauchly each made about \$250,000 in selling their company to Remington Rand. Mauchly died in 1980.

As for Eniac, which was once an electronic marvel and remains a historic landmark, most of it has been stored in the Smithsonian Institution, out of sight, for more than a quarter of a century.

Donaghue to Advise Reagan?

WASHINGTON, D.C. — Hugh Donaghue, a Control Data Corp. vice-president, reportedly will become President Reagan's chief telecommunications adviser.

For several years, Donaghue has been in the forefront of efforts to reduce restrictions on U.S. computer exports to the Soviet bloc, to rationalize U.S. information policy and to lift restrictions imposed by European and Japanese

telecommunications administrations on the use of private-line circuits.

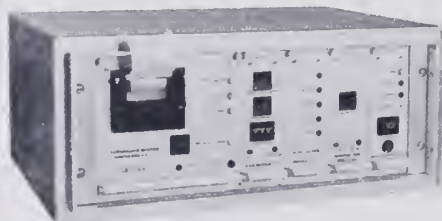
He is currently overseas, but a CDC spokesperson, when asked whether Donaghue will be appointed administrator of the National Telecommunications and Information Administration, said he is a "leading candidate." In that post, Donaghue would be strategically placed to promote the changes he has long been advocating.

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To Eliminate Waste

GAO Seeks Federal Management Guidelines

By Brad Schultz
CW Staff

WASHINGTON, D.C. — The General Accounting Office (GAO) has asked the Reagan administration's budget chief to give federal agencies guidelines for managing DP systems.

GAO told Office of Management and Budget (OMB) Director David A. Stockman that federal agencies wasted more than \$300 million by mismanaging just 10 of the many DP systems it reviewed during the past decade.

In that time, GAO gave Congress 57 reports on mismanagement of federal systems, claiming that many systems "were not cost-effective, did not meet agency needs, took too long to develop or simply did not work."

While Stockman considers the latest advice on federal DP management from the investigative arm of Congress, Congress is mulling over Stockman's proposal to slash funding for virtually every federal agency outside the Defense Department.

GAO Chief Accountant Donald L. Scantlebury recently wrote Stockman that a well-defined standards framework for system development does not exist in the federal government. Scantlebury asked the ex-congressman to create a framework and have all federal users abide by it.

Many agencies have incomplete policies on development or fail to follow policies they do have, the GAO official pointed out. And many agencies lack managers with needed DP skills.

According to GAO, problems with federal DP stem from inadequate planning, ineffective management and user involvement, poor control of systems development and changes to applications programs, and inadequate budgeting and financial control.

Budget cuts generally move government DP users to curtail system development before scaling down existing operations, experts have noted [CW, April 14]. Often, reduced department wide budgets drive up demands on the DP section, which must support policy shifts by retooling systems.

While Stockman has 57 GAO reports before him documenting problems with federal DP, his 1982 federal budget proposal could make the road to improvement bumpier than ever if federal users are forced to tighten belts.

SSA Policy

In 1979, GAO told Congress that the Social Security Administration (SSA), one of the world's largest DP users, was taking an "unstructured, often hurried approach" to DP planning and management. This resulted in incomplete system documentation, unvalidated system changes and failure to meet users' needs within SSA, leading to such gaffs as the issuance of \$25 million in erroneous benefit payments through the Supplemental Security Income program between 1974 and 1978.

The Stockman budget calls for sweeping changes in SSA policy that would alter the Baltimore-based agency's massive DP systems.

GAO has faulted DP management at agencies that take money as well as agencies that spend it. Another 1979 report told Congress the Internal Revenue Service (IRS) needed to improve

long-range DP planning and control over system development, Scantlebury reminded the Reagan administration budget chief.

At the time, IRS lacked a means of determining how much new systems were costing, the relative worth of existing systems and the total DP cost of IRS programs, GAO charged. The tax collecting agency had no formal policy for involving its senior managers in DP matters, allocating DP resources equitably among internal users, ranking requests for new applications and getting users more interest in saving the taxpayers' money through improved DP procedures.

President Reagan has proposed sig-

nificant reforms in the tax structure IRS is supposed to enforce. Stockman's cuts in spending will be accompanied by cuts in tax rates — a process that would require changes in IRS DP systems — if the Reagan approach to stagflation fighting wins the support of Congress.

Within the only federal department slated for increased appropriations under Stockman's budget, GAO found "serious technical and managerial problems" with the way weapon system software is designed, developed, tested and maintained. The Defense Department was spending more than \$3 billion annually on such software, which GAO termed "very often" un-

reliable, in 1978 and the cost has risen steadily since then, Scantlebury noted.

The DP Reorganization Project organized under OMB by the Carter administration found the U.S. Navy ignorant of how many systems it had, Air Force DP sites vulnerable to sabotage and the Army lacking sufficient DP expertise [CW, Aug. 7, 1978].

The Pentagon reportedly told GAO it will follow the latter's recommendations for improving the quality of system development. Under President Reagan, the most expensive system development project in Pentagon history — the MX missile program — will be initiated if Congress approves.

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IEEE Plays It Safe With Two Net Standards

By Molly Upton

Special to CW

SAN FRANCISCO — The Institute of Electrical and Electronics Engineers' (IEEE) Data Link Media Access Control Subcommittee, charged with recommending one local network standard, instead recommended both token passing and Carrier Sense Multiple Access/Collision Detection (CSMA/CD). "The only rational thing professionals could do in a situation was to accommodate and minimize the impact on the users," commented Gerald Clancy, a member of that committee and Honeywell Inc.'s manager of strategy planning.

Although by its very nature the CSMA/CD scheme favored by the Ethernet Troika of Xerox Corp., Intel Corp. and Digital Equipment Corp. did not meet the initial requirements established for a local net standard, the committee could not muster the necessary two-thirds vote to recommend a standard without including the CSMA/CD scheme, he told a session on local networking standards at the IEEE Computer Society's Spring Computer Conference (Compcon) here.

While the committee's actions may be viewed as a cop-out, Clancy indicated that chip makers say they can incorporate the requirements of both schemes in one chip. Thus, users and systems implementers can select the method of their choice.

The Ethernet scheme is not deterministic, as originally required in the committee's charter. For instance, the requirement was that the system itself could not be a noise source, Clancy said, adding someone had described Ethernet as akin to shouting while listening.

In addition, it isn't topology-independent, but rather is largely limited to a bus structure, he observed.

December Vote

If one examines the December meeting's ballot, one can see the committee's dilemma, considering five of the votes against token passing and for CSMA/CD were from Xerox, DEC and Intel. The secret ballot count regarding token passing was 14 for, 12 against; CSMA/CD mustered 10 for, 16 against; and the option of both was

17 for, 10 against.

In a subsequent open vote, the ballot for both received 20 votes with only four oppositions.

Now that the hot political issue is settled, Clancy said both sides are working together tightly to nail down the few remaining recommendations. The committee's target is to be through by the end of summer.

Some of the shortcomings of the

Ethernet scheme, according to Clancy, include the fact that access is statistical and that efficiency decreases with decreasing frame size. In addition, the minimum frame size increases linearly with increasing wire length, he observed. The standard deviation of waiting times increases faster than the load.

On the plus side, the collision resolution algorithm is very easy to imple-

ment, Clancy said.

Token passing can best be thought of as a logical ring, and the only point of contention is when a node gets into a ring, he said. It is deterministic, and there is guaranteed resolution of whether the message sent is actually received.

Upton is editor of EDP Industry Report, an International Data Corp. publication.

Simon Sees Computers Changing Views

(Continued from Page 1)

psychology at Carnegie Mellon Institute and has also received the Nobel Prize for Economics.

Starting with the hypothesis that a computer is much more than a number cruncher but rather a "perfectly general symbol-manipulating device," he added, "our assessment of the computer's influence on society depends on what we think of that hypothesis." There have been a few seminal points that have changed man's

view of the world and apply technology to design systems which keep man's peace in the universe in which he lives instead of weapons with which to wage war on the rest of nature," Simon said.

One member of the audience suggested to Simon that although this theory was nice, it was predicated on the fact that man has a self-awareness. But, he pointed out, computers do not, and thus could lead to danger. Simon countered that there have been artifi-

and computer talents available.

He concluded that automation has been in effect for 25 years and there's no basis in fact or theory that the computer is seen as dehumanizing and alienating people from their jobs. "What should be looked at is the larger picture of the evolution of the work force from manufacturing to the service sector, he added.

Simon repeatedly reminded his audience of their social responsibilities by saying that "issues with computers are ones we're going to settle; they won't be settled by forces 'out there.'"

"You can do something," he emphasized. When designing equipment, engineers should design decent man-machine interfaces and, more importantly, consider the character of the environment in which the equipment will be used. "Maybe for the first time in history some attention will be paid to this," he commented, lamenting the lack of engineers concerned with human factors.

He advised the audience to remember "the most important aspect of human design in the man-man interface, excluding those who get therapy by programming."

Simon wasn't overly optimistic about the potential of the home computer to better mankind. "If you rave about the thought that kids will use access to encyclopedias, be realistic. They'll probably get copies of books of which their parents don't approve. It might compete with TV, but what happens in that interaction depends on what we think humans are and want," he said.

Upton is editor of "EDP Industry Report, an International Data Corp. publication.

CW at IEEE Compcon

view of himself, including the Copernican theory that man is not the center of the universe and Darwin's theory that man is only one among other creatures that has evolved, he said.

The key influence on man of the Nasa space effort was the impact of the pictures of earth from space, which really made Copernicus' point and made reality of the phrase "Spaceship Earth." In turn, this view of our planet as something relatively fragile boosted man's concern regarding environmental aspects of life.

A third new perspective may come to man if he believes the hypothesis about computers as being symbol machines, Simon stated. For then, if that theory is true, thinking is shared by all species (including computers) that can manipulate symbols.

"This could lead man to realize he's part of a world, not above nature but a part of it. And if he can make peace on those terms, he may use his knowledge

of artificial intelligence systems that recall why they are doing certain things, and thus conceivably could have instilled in them the same type of "self-awareness."

Simon believes we've only seen the beginning of artificial intelligence (AI) and other areas of the ultimate uses of computers. When AI was started, people thought it would be easy to duplicate sensory functions and take much longer to have machines perform thinking functions, but in fact the situation has been just the reverse. "College professors will be automated a long time before bull-dozer drivers," he said.

In discussing the theory that automation will displace workers, he said, "We can put aside the long-run effects of unemployment from automation for a long time," but cautioned that society should be doing a better job of dealing with the transient effects. In the long run, he observed, the job spectrum will adapt to both human

Honeywell Adds DPS 8s To CP-6 Processor Line

(Continued from Page 1)

The system cost is \$615,774, the monthly five-year rental charge is \$18,099 and the monthly maintenance charge is \$3,089.

The dual-processor system — consisting of the FNP with 80 lines, a 1,600 line/min printer, the card reader, three tape drives and 1.4G bytes of disk storage — costs \$1,003,038 and can be rented for \$29,208 per month. Maintenance costs \$4,514/mo.

For those users with an upgrade twinkling in their eyes, the single-processor 8/44C can be revamped in the field to a dual-processor version.

Finally, the DPS 8/20C is a 20-user system based on the technology of the previously introduced DPS 8/44C. Consequently, the newer machine is field-upgradable to its older parent.

The 8/20C is designed for use as either an entry-level stand-alone CP-6 system or as a remote satellite, linked to larger host systems. A typical configuration includes: an FNP with 20 lines, a 1,200 line/min printer, a card reader, one tape drive and 200M bytes of disk storage. The system costs \$496,723, rents for \$14,908 per month, and carries a monthly maintenance charge of \$2,597.

One- and three-year rental plans are available for the 8/20C, as well as for other systems in the CP-6 line. In addition, all of the CP-6 systems include a variety of reentrant language processors such as Cobol 74, ANS Fortran, APL, Text and Basic.

Additional information can be obtained from Honeywell through P.O. Box 6000, Phoenix, Ariz. 85005.

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IBM Develops Prototype Of Improved Logic Circuitry

By Jeffrey Beeler

CW West Coast Bureau

SAN FRANCISCO — Two IBM designers have reportedly developed a prototype of an improved logic circuit that could someday speed the operation, increase the component density and cut the power consumption of the company's future processors, both large and small.

Designed at IBM's General Technology Division in E. Fishkill, N.Y., the experimental circuit is said to combine many of the best features of transistor-transistor logic (TTL) and emitter-coupled logic (ECL), two of the industry's most widely used electronic technologies.

Although both TTL and ECL offer important performance advantages, neither circuit technology has proven versatile enough to displace the other in all applications.

TTL boasts high component density and low power consumption, but achieves those benefits at the expense of processing speed. ECL, on the other hand, operates at high speeds, but lacks TTL's density and requires a relatively large amount of power.

Neither of the two dominant logic technologies can offer high speed and low power consumption at the same time — not so with the experimental IBM circuit. In component density and electricity consumption, the alternative technology rivals low-power TTL, while in processing speed, the circuitry outperforms fast-running ECL, according to IBM designer Richard Konian.

Potential Applications

The combination of low power consumption and high speed makes the experimental logic circuitry potentially applicable to the full range of IBM's processor line, from the most powerful large-scale mainframe to the humblest small business system.

By varying the number of circuits per chip and the power consumption per chip, IBM could someday use the same logic technology to produce both high-speed and low-power/high-density processors. A high-speed model, for example, might be built around 2.5mW logic chips, each holding a few thousand of the experimental circuits, while a low-power/high-density system might require 0.5- to 0.7mW chips, each containing at least double the number of circuits, an IBM spokesman explained.

Speaking at last week's Comcon '81 conference here, Konian declined to speculate about when the proposed logic technology might make its first appearance in IBM's product line. Konian also declined to discuss the circuitry's possible impact on the performance of future IBM processors.

At present, the circuitry is still very much in the early testing stage, and both Konian and a second IBM spokesman left open the possibility that the technology might eventually be abandoned in favor of another, more promising logic design.

Coinvented by Konian and his IBM colleague James Walsh, the experimental logic circuit boasts a 300- to 800-picosec gate delay, compared to 500 picosec for high-speed ECL. The technology also requires 0.5- to

1.5mW, compared to about 1mW for low-power TTL and 7- to 10mW for ECL, Konian said.

Konian attributed his circuit's low-power, high-speed operation to a design in which the unit's basic logic functions and push-pull driver are combined in one logic stage. Together, the basic logic functions and push-pull driver form the Konian-Walsh circuit's two independent branches.

By joining the two branches in one stage, the circuit enables an electrical signal to travel from input to output in one collector time, Konian explained. The result is decreased intracircuit delay.

Intel, HP Unveil Plans for 32-Bit Chips

NEW YORK — In recent announcements, both Intel Corp. and Hewlett-Packard Co. unveiled details of their own 32-bit microprocessor chips, with Intel ready to market its first two-chip system within weeks.

Using Ada as a programming language, Intel's iAPX432 system is comprised of three 64-pin chips containing a total of 200,000 transistors, a company spokesman said. The system includes two general data processors and an I/O processor that can link attached peripherals and memory circuits.

The system, the result of a five-year, \$25 million research and development effort, will "tend to create its own markets," an Intel spokesman said, although it will find immediate applica-

tions with software intensive and multi-functional users, he added.

The two-chip 432/100 system will sell for \$4,250, including full documentation, evaluation tool and backup, as well as Multibus compatibility, while the three-chip set, ready later in 1981, will sell for about \$1,500 per set.

HP officials said they have successfully tested their own 32-bit microprocessor entry, one with 450,000 transistors on a single negative metallic oxide semiconductor (NMOS) chip that reportedly dissipates 7W of power.

Although details of the company's microprocessor are sketchy, it is reportedly part of a six-chip set.

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Doll Predicts 8100's Role as Showcase Processor

By Tom Henkel
CW Staff

NEW YORK — IBM's 8100 is alive, not so well, but expected to recover.

Dr. Dixon R. Doll, president of the DMW Group, Inc., said the 8100 will become IBM's "showcase" distributed data processor and will eventually have the same impact on IBM's Data Processing Division (DPD) as the Series/1 had on the firm's General Systems Division (GSD).

The 8100 still has some major problems, but, Doll told a Yankee Group conference here last week, IBM's long-term strategy will solve most of them. For example, IBM plans a marketing push to make program development aids such as the DMS package a key selling point of 8100 processors. In addition, IBM will solve the 8100's software inadequacies by encouraging third-party software firms to develop more applications.

Doll said IBM also plans to improve its own 8100 software, but long delays have crimped those plans. So in the interim, DPD will modify its marketing strategy and try to sell the 8100 processor as both a stand-alone minicomputer and a distributed data processing node.

In the former environment, IBM plans to sell more 8100s to end users — as opposed to the DP department — stressing the 8100's ability to operate in an office environment without special cooling or staff expertise, Doll said.

To pacify 8100 users who have run out of main memory and horsepower, Doll said IBM will announce larger models of the 8100 line. The enhancements will take the form of a one million instructions per second (Mips) processor sometime in 1981 and a 2- to 3-Mips processor at a later date.

The 1-Mips processor will either be a new CPU, or engine, or IBM could announce an attached processor version of the existing top-of-the-line 8140, Doll said.

For low-end users, Doll said IBM may announce a smaller version of the now-entry level 8130. However, Doll cautioned that users of that processor have reported it is too small to do much applications processing and a smaller version is likely to be even worse.

Main storage disk capacity will be expanded for 8100 systems and IBM will also expand support for office auto-

mation, word processing terminals, according to Doll.

IBM may also announce several new products to support the 8100 line. One of the current problems with the system, Doll said, is a lack of a movable disk head. That means users have to back up critical files to tape to make way for other processing activities. That process is slow and expensive, considering the tape drive that attaches to the 8100 is rather slow. As a solution, IBM may add a movable disk, a faster tape drive or both, to bolster the 8100 lineup, he said.

Doll predicted IBM's 8100 strategy will work. While the firm shipped an estimated 3,000 to 5,000 8100s in 1980, Doll said that number will jump to 8,000 to 10,000 in 1981, 15,000 to 20,000 in 1982, 36,000 to 40,000 in 1983 and 70,000 to 80,000 in 1984. Assuming each 8100 system costs between \$50,000 and \$100,000, Doll fi-

gured IBM stands to make between \$3.5 billion and \$8 billion on 8100 processors by 1984.

But for the present, IBM is not geared up for mass shipments of 8100s. Currently, only one plant — Raleigh, N.C. — makes the processors and only two shifts at that plant are operational. That means, Doll said, IBM is not equipped to produce large quantities of its 64K MOS memory chips for the processors.

There are other problems the 8100 must overcome before it reaches the "showcase" status of Doll's predictions. The processor's loop attachment of peripherals makes it virtually impossible to use anything but IBM peripherals on 8100 processors. In addition, the 8100 lacks a clear bridge between its two available operating systems, DPPX and DPCX. Doll said IBM will solve that problem sometime in the future.

MIS Exec Faces Barrage of Technology

(Continued from Page 1)

math of an enemy artillery bombardment, today he and his colleagues find themselves forced to contend with a heavy barrage of new and innovative technology. And just as he was once compelled to reconstruct the ruins of a battle-blasted data center, today faces the task of having to constantly renew and replace old systems to reflect the passage of time and the march of tech-

nology.

The enemy and the battlefield may have changed, but the challenges and missions have remained much the same.

One of the most important and difficult of Hazlett's modern-day missions is to figure out how today's rapidly advancing systems technology can best be applied to meet Levi-Strauss' current and future business needs.

"The main question facing the industry during the 1980s is no longer whether it will have enough effective technology at its disposal to do the job," Hazlett said. "The question, rather, is whether we will be able to harness that technology and bring it into the mainstream of the business environment.

"That's certainly the challenge now facing us here at Levi-Strauss. We have to make sure we stay competitive, not just in the products we offer to the general public, but also in our ability to find the most effective systems to manage our business," Hazlett said.

Technological Benefits

To a large extent, Hazlett's job as an MIS vice-president boils down to one overriding objective: to teach general management and other nontechnical users the potential benefits and full implications of the latest technological developments.

"Keeping pace with the growing demand for user training will be among the chief obstacles that [Levi-Strauss' computing operation and I] will have to overcome during the coming decade," Hazlett explained. "We have a very professional staff that already has a firm grasp of the rapid technological changes currently taking place in the industry. But that understanding has no value for the company unless you can translate it into a system that management and other users can make sense of and put into practice."

As the head of an organization that serves as a kind of bridge between advanced technology and the inexperienced users who depend on it, Hazlett moves with as much ease in the down-to-earth world of business as he does in the highly specialized realm of computing. His ability to straddle the gap between the two vastly different

disciplines is the result of almost 23 years of formal education and professional experience.

Hazlett's computing career began in 1958 when, after graduating from Georgia Tech with a B.S. degree in Industrial Management, he joined the Navy for a 20-year hitch.

During his ensuing tour of duty, he held assorted computing positions in countries ranging from Spain to Vietnam and was finally appointed financial systems director, a position in which he oversaw development of the Navy's first distributed processing and telecommunications network.

During the same years, he also found time to study at George Washington University, where he earned a master's degree and later a doctorate, both in Business Administration.

In 1978, Hazlett retired from the Navy to join Levi-Strauss as MIS director. Last June, he was promoted to his current position, where he manages a \$20 million annual budget and exercises functional control over a 350-member computing staff scattered among 22 foreign countries. Another Levi-Strauss executive oversees all the company's computing activities in the U.S.

For the most part, Hazlett's advance up the corporate ladder has proven the very antithesis of the computing field's standard career path, but his apparent disregard for orthodoxy seems to have done him little if any harm. "I was never a programmer/analyst, and because of the nature of military organization, I was involved in management from the very beginning," he recalled.

Correction

A table that contrasted power consumption levels for CRT terminals in an article that summarized Frost and Sullivan, Inc.'s report, "Energy Efficient Data Communications Networks" [CW, Feb. 16], misstated the watts consumed by three Beehive International, Inc. models, according to a spokesman for that vendor. The DM1A, DM20 and DM30 terminals consume 70W, not 200W, he said.

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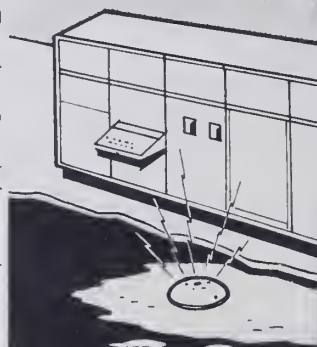
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The first book, *Structured Programming for the COBOL Programmer*, presents Paul's complete system for developing better COBOL programs—from program specifications through design, documentation, coding, testing, and maintenance. As the title implies, these methods are based on the ideas of structured programming. But if you've been discouraged by other "structured" COBOL methods, take heart. Paul's methods are both simple and practical. And I think you'll be delighted at how easily they'll improve programming in your shop.

The second book, *The Structured Programming Cookbook*, is a tool kit for developing new programs. The first part gives standards and guidelines for all phases of

About Paul Noll

Paul had worked in COBOL about 15 years—and he knew it inside out—when he started to experiment with structured programming. So he was able to develop complete, practical methods for applying structured theory to COBOL. He then trained dozens of programmers in his job at Pacific Telephone to use his methods. Soon, project managers were asking for his trainees—not experienced programmers—when they needed a job done right and on time.

Paul now works with companies across the nation as a consultant. His services range from helping to set or review shop standards to selling upper

management on structured programming. He's got all the facts and figures and the names of the some of the largest companies in the country (as well as some of the smallest) who have implemented his methods with great results.

Paul also gives on-site seminars in structured techniques and advanced COBOL. His many years in DP and his remarkable sense of humor give his seminars sparkle and add to the enjoyment of learning. Most important, the people who take his seminars are eager to put what they've learned to work.

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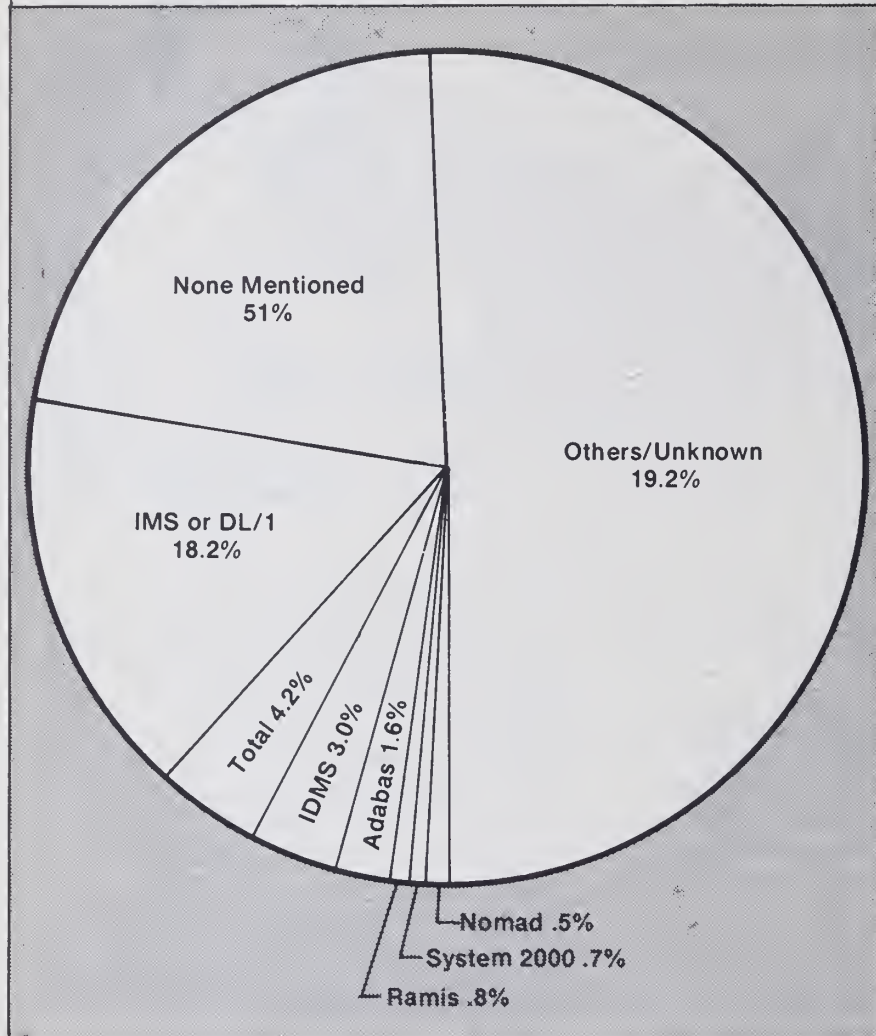
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Data Base Management System in Use At Respondents' Organizations



IDC Finds Less Than

By Bruce Hoard
CW Staff

WALTHAM, Mass. — Despite the fame achieved by data base management systems (DBMS), less than half the organizations surveyed in a recent International Data Corp. (IDC) study used one — and only one-third of all respondents had any DBMS experience whatsoever.

The Information Systems Planning Service (ISPS) at IDC asked about an assortment of tools and techniques in compiling its 107-page report, entitled *Systems Development Productivity* [CW, Feb. 9].

Survey responses were received from 995 MIS managers, programmers and analysts totaling an aggregate of almost 10,000 years in the information processing industry. In addition, interviews were conducted with 100 DP professionals, academics and other industry experts. Current literature was also considered.

Although many respondents had never used a DBMS, an almost unanimous 91.5% of those who had "agreed" with the statement, "Using the right kind of data base management system can save you a lot of programming time."

Agreement meant they either definitely agreed or were inclined to agree. The range of possible answers also included "definitely disagree" and "inclined to disagree."

Of the 48.2% of organizations which used a DBMS, 85.5% reported on-line use in some fashion. A lesser 61.3% used it for query language access and only 35.9% used it for on-line query language update. "It thus appears that a large portion of DBMS use is via procedural language programming interfaces," the study noted.

Importance Ratings

IBM's IMS was a runaway winner when respondents were asked which DBMS was the most important in their careers and which DBMS was in use at their organizations (see charts). In terms of importance, 13.7% cited IMS, while 18.2% said it was currently in use.

Cincom Systems, Inc.'s Total ranked second to IMS in both categories. In descending order, others mentioned were Adabas by Software AG of North America, Inc.; Ramis by Mathematica, Inc.; System 2000 by MRI Systems Corp. and Nomad by National CSS, Inc.

"Others/Unknown" actually beat out IMS, receiving 19.2% of the votes in the current use category, and was second at 8.2% on the importance question.

Asked about programming languages, respondents repudiated the notion that Cobol and Fortran stand head and shoulders above their competitors, ISPS declared. None the less,

First Amdahl 470V/6 User a Happy Customer

By Lois Paul
CW Staff

SPRINGFIELD, Mass. — After five years, the honeymoon still is not over for the first commercial user of the Amdahl Corp. 470V/6.

In fact, Massachusetts Mutual Life Insurance Co. (MMLI) has been so satisfied with the first system that it added a second 470V/6 and, last year, upgraded to an Amdahl 470V/8, according to David J. Blackwell, vice-president and chief of the Information Services Division.

"Obviously we have been happy with the results," Blackwell said, adding that the price/performance advantage which prompted the first purchase of an Amdahl system in December 1975 also led to the decision in 1980 to choose the 470V/8.

Based on an evaluation made about six months ago, MMLI "appears to have saved about \$2 million on the first Amdahl machine," Blackwell said.

The company had been torn between purchasing an IBM 370/168 and an Amdahl 470V/6, Blackwell recalled.

"At the time we bought it, we assumed the Amdahl would not have a great percentage of residual value, but the opposite has been true," he remarked, noting that the 1975 Amdahl 470V/6 had a higher residual value (30%) in 1980 than the 1975 IBM 370/168 (20%).

High Reliability

"Our biggest concern five years ago was whether Amdahl would be around. Now, of course, there is no question. They have over 500 machines," Blackwell said.

"From our standpoint, the decision to

install Amdahl equipment has worked out very well," Bob Bologna, director of MMLI's Information and Services Division, said.

"The reliability of the equipment has been very high, about 98% to 99% uptime over the years consistently," Bologna added.

System Evolution

Five years ago, MMLI was using a 3M-byte 370/158 and a second 370/158 to handle batch and IBM's Time-Sharing Option. Currently, it is using the Amdahl 470V/8, which has 12M bytes memory and 16 channels, and one IBM 370/158, which has 2M bytes of memory and a National Advanced Systems (NAS) 2M-byte monolithic main memory.

The systems run on MVS and MVT and interface with IBM 3330 and 3350 disk drives. Backup is provided by Storage Technology Corp. tape drives. The insurance company uses IBM and Courier Terminal Systems, Inc. terminals.

"As far as Amdahl's service and reliability to us on an operational basis, it has remained the same. It has not gone down, although the company has gone through its own growth pattern in getting to be a large company," Bologna said.

"It is a very stable operation," he said, adding that "hardware and software support has been excellent."

Bologna said on-line coverage is greater now at MMLI than it was before. Four years ago, 100 locations were connected on-line: There are now 240 on-line locations.

The DP staff and the volume of work have more than doubled, and the demand for reliability has increased due

to the sensitivity of the applications.

Blackwell said, "Our environment grows about 18% to 20% compounded."

With regard to any future expansion, "As we did last year, we'll look equally at Amdahl and IBM," he said, adding that the company has thought of look-

ing at NAS systems also, but found there was no particular price advantage over Amdahl.

For maintenance also, he said it was better to have a single major supplier. "We have been very happy with the maintenance from both IBM and Amdahl," Blackwell noted.

Strikers Lose Cool and Pay When Prank Backfires

By Bill Laberis
CW Staff

BLUFFTON, Ind. — All they wanted to do was add a little summer heat to an already smouldering labor situation by sabotaging their company's electrical system, thereby knocking out the air conditioning unit and fueling hot tempers.

But the former strikers at Franklin Electric, Inc. here got more than they bargained for when their prank succeeded in shutting down part of the company's computer operation, instigating a labor suit recently settled by an appointed arbitrator.

It all started back in December 1978 when Franklin's rank-and-file union electrical workers walked out, precipitating a six-month strike. In the interim, the company hired replacements for some of the strikers, while other strikers gave up the picket lines and returned to their jobs.

'Some Hostility'

When the strike was settled, returning workers were not exactly pleased to be greeted by the new workers as well as those who had abandoned the

picket lines, according to the company officials.

"There was some hostility out there on the floor, and we began to notice a few scattered incidents we weren't too happy about, including the fact that someone was tripping off the electric power in part of the plant," Richard Cantwell, employee relations manager at Franklin, said.

"So we rigged up a camera to catch them in the act."

Power Outage

The sabotage had already succeeded in killing the power a couple times, shutting down the air conditioning and destroying some chemicals in the process, as well as bringing down part of the computer system, Cantwell said.

The saboteurs were caught red-handed by the hidden cameras and summarily dismissed, but not before some valuable computer time was lost. An appointed labor arbitrator, however, ruled that the two had to be reinstated, but with loss of back pay.

The lights and computers have reportedly been on at Franklin Electric ever since.

Half of Organizations Surveyed Use DBMS

Cobol still checked in as the most commonly used language at 47.3% of the organizations tallied.

RPG edged out Fortran for second place, 14.8% to 8.9%. Close on the heels of Fortran was Assembler at 8.4%. The rest: Basic, 5.4%; PL/I, 4.8% and Pascal, 1.2%. "Other" accounted for 8.9% of the responses.

A question on language preference

would prefer to use PL/I or Pascal."

Moving along to specification methodologies, the study found that "nearly three of every four respondents (74.7%) report that programmers and analysts do not typically work from clear, well-defined specifications."

Organizations handicapped by such weaknesses tend to have lower performance than their counterparts, the

Although many respondents had never used a DBMS, an almost unanimous 91.5% of those who had agreed with the statement, "Using the right kind of data base management system can save you a lot of programming time."

and importance evoked similar reactions. DPer's were asked to compare the language they considered most important with that preferred if one had to be selected.

Cobol Tops

Cobol topped the competition again. It was considered most important by 43.2% of respondents. It was preferred, however, by 37.8%. Fortran moved up to second place in importance but plummeted to fourth in preference, registering the largest net loss in the category.

PL/I, fifth in importance because of its young age, according to ISPS, was second only to Cobol in preference.

The study combined importance and preference results to determine overall loyalty. The rundown there: PL/I, 77.1%; RPG, 73.5%; Pascal, 70%; Cobol, 68.2%; Basic, 50%; Assembler, 41.8% and Fortran, 34.7%.

"There seems to be a clear, though not overwhelming preference shift to the newer and more powerful programming languages," the report noted. "Over one in five respondents

study said.

"There appears to be a fundamental underlying difference between organizations which have effective systems in place and those in which the models, standards and procedures are, at best, of little help, and, at worst, actually an impediment."

Can "just about anybody who wants to . . . become a first-rate programmer if they get the right training"? The answer, according to DPer's, is a resounding "No." Only 26.4% felt motivation and training could make up for a natural lack of aptitude.

Other findings included:

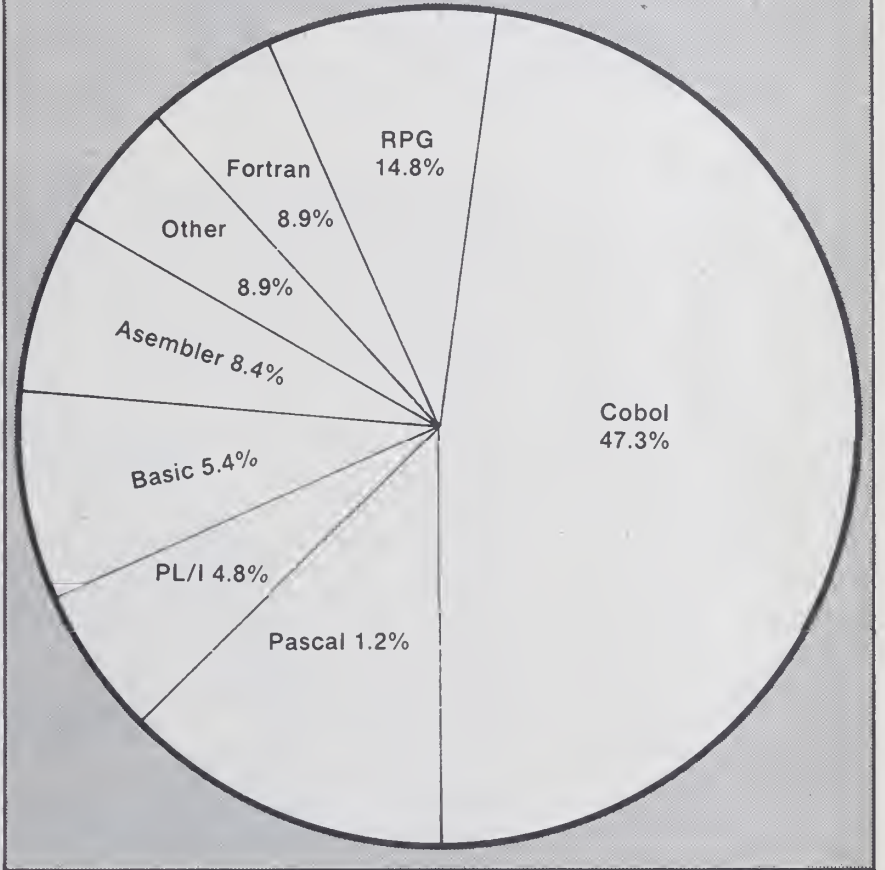
- "Some programmers just seem to get a lot more done than others." Over 95% agreed.

- Many DPer's do not feel they work in an "uncrowded, attractive, comfortable and quiet" working environment.

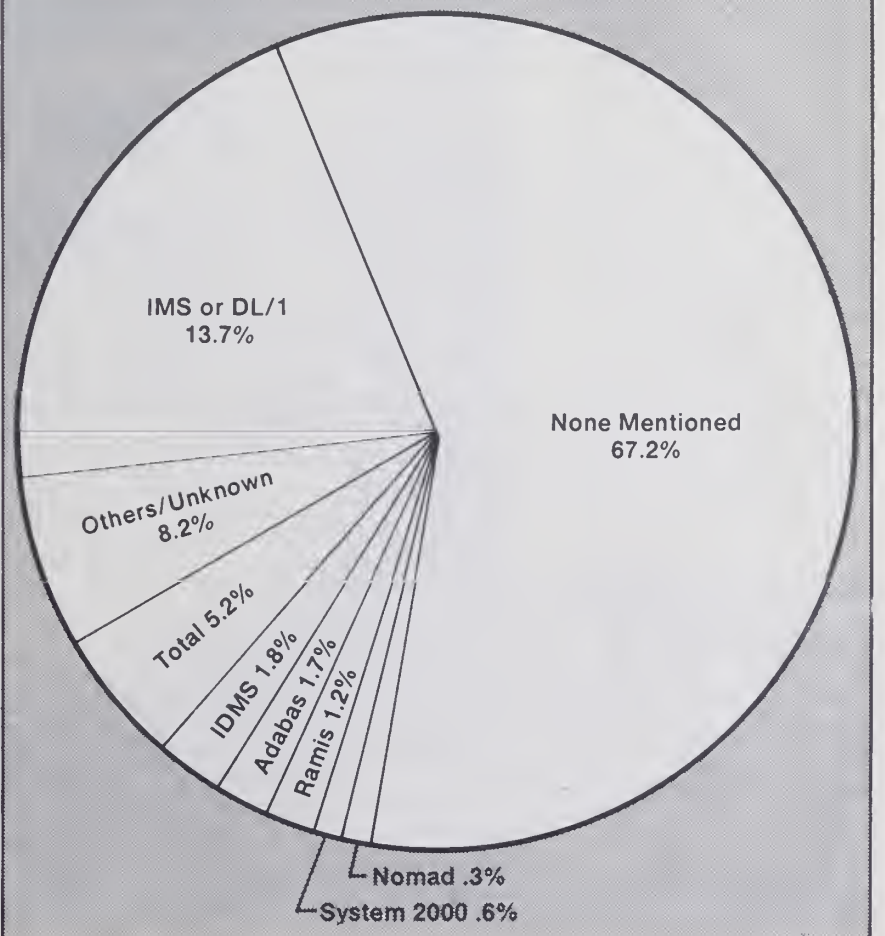
- Two-thirds of respondents said videotape courses are "an excellent way" to learn new skills.

The report is available for \$4,500 from IDC at 214 Third Ave., Waltham, Mass. 02154.

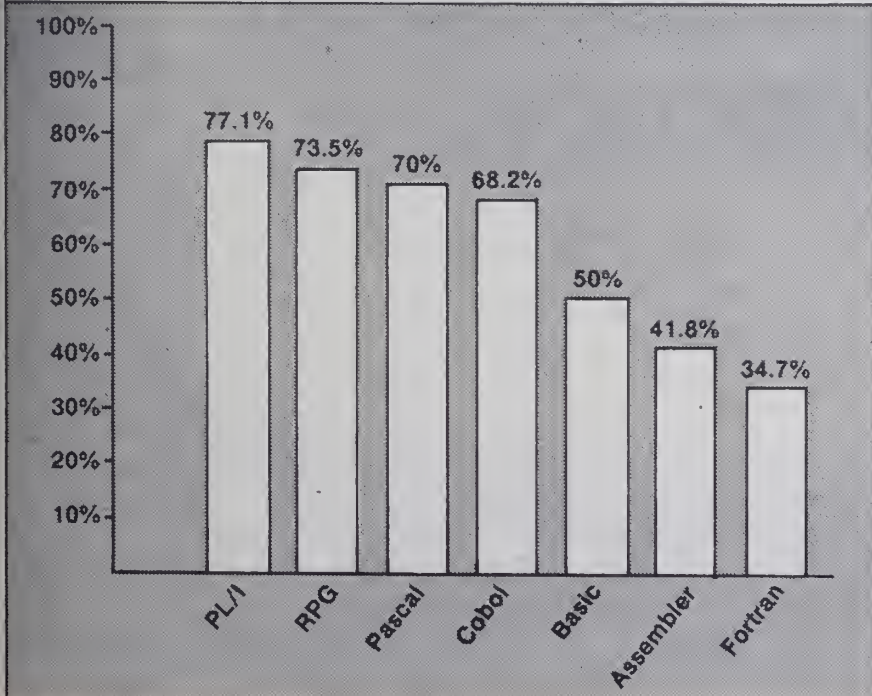
Programming Language Used In Respondents' Organizations



Data Base Management System Cited As Most Important in Respondents' Career



User Programming Language Loyalty (Combination of Importance to And Preference of Individuals)



Worth \$200,000

NYIT Ex-Directors Charged With Time Theft

By Bob Johnson

CW New York Bureau
OLD WESTBURY, N.Y. — Charges of theft of computer time worth \$200,000 have been filed against two former directors of the computer department at the New York Institute of Technology (NYIT) here.

According to Denis E. Dillon, the Nassau County District Attorney, the two computer specialists set up a data storage company in 1978 called Balmor, Inc. using the school's Xerox Corp. Sigma-9 computer and served three business concerns, which included a medical magazine subscription company on Long Island, an aircraft parts company and an import/exporter, both in Manhattan.

Computer fees totaling at least \$40,000 were paid to the suspects, identified as Alan Rosenblum, a former director of the school's computer department, and his successor, Bruce Marino, both former students of the institute, stated the district attorney.

Paul Kowtna, assistant district attorney of the Commercial Frauds Bureau, said that the scheme was uncovered by the combined efforts of the district attorney's office, Rolf Moulton of the New York City Department of Investigation's computer ser-

vices security unit and the present director of NYIT's computer department, Bruce Laskin.

Five telephone lines were installed and tied into the Sigma-9 for use by the Balmor firm. The normal greeting used to hook up to the computer was changed slightly; never mentioning NYIT's name allowing Rosenblum's

and Marino's customers access.

School officials began to think something was wrong when an increased amount of disk storage was being used and the school's computer output was noticeably less productive. Investigators then duplicated information from the disks onto tape to use as evidence and then returned it

to the original disks.

Although the data accumulated by the computer is expected to be used as evidence to be presented to a grand jury if necessary, under New York State law the theft of computer time is only a misdemeanor. However, the district attorney chose to bring third-degree grand larceny charges against the former directors,

which are felonies, citing the alleged \$40,000 in profits.

Dillon said he was frustrated by the law that makes it only a misdemeanor to commit computer crimes and he added that his office was having legislation drafted that would update the state law, making it similar to theft of services, and set monetary standards if adopted by the state legislature.

Seminars to Cover Quality Assurance

WELLESLEY, Mass. — Q.E.D. Information Sciences, Inc. has announced a series of three-day seminars on DP quality assurance in Philadelphia, March 2-4; Arlington, Texas, April 20-22; and in Boston, June 22-24.

The seminars, designed for data processing managers and technical staff, will discuss how quality assurance groups can utilize an organization's standards and procedures in helping DP managers develop computerized applications.

Tuition costs \$495 per person with discounts for groups from the same company. More information is available from Q.E.D. Information Sciences, Inc., Q.E.D. Plaza, P.O. Box 181, Wellesley, Mass. 02181.



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Doing Homework Saves Energy

By Lois Paul
CW Staff

LAGUNA BEACH, Calif.—Fourth through sixth graders here are saving their parents 15% to 25% in energy costs simply by doing their homework.

Since January 1979, they have been participating in a pilot energy conservation program using computers at the Top of the World Elementary School, where utility costs also have been trimmed by

60% in the process. A total of 250 students are involved in the program, which was conceived and developed by Engineering Supervision Co. (Esco) and is being funded entirely by the private sector, according to John Phillips, president of Esco.

The program is the "fallout" of a load management (energy reduction timed) program that Esco developed in 1976 with the Department of Energy, Phillips explained. "What we

said was, instead of a big building, let's talk about a child who is, in fact, the real operator in the home."

The children share 12 Lear Siegler, Inc. ADM-3 terminals, and each have about 15 minutes per day on the system. The terminals interface with a Prime Computer Inc. 250 minicomputer system at Esco's nearby Newport Beach offices.

Esco developed a seven-mode simulator for the pro-



Working at ADM-3 Terminal

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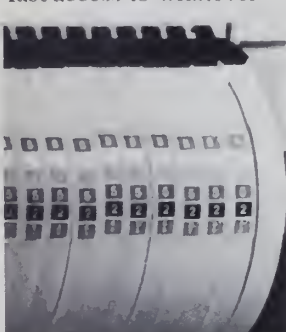


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information you need. At a push of a button or turn of a handle, these track-mounted units slide open to allow entry at the proper location. New cantilevered shelving allows fast scanning over an entire storage bank.

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MAX provides storage accessories specially adapted to many different types of media. For tape reels, Disk packs, Data binders, printouts and more.

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that require tracks built into your floors?

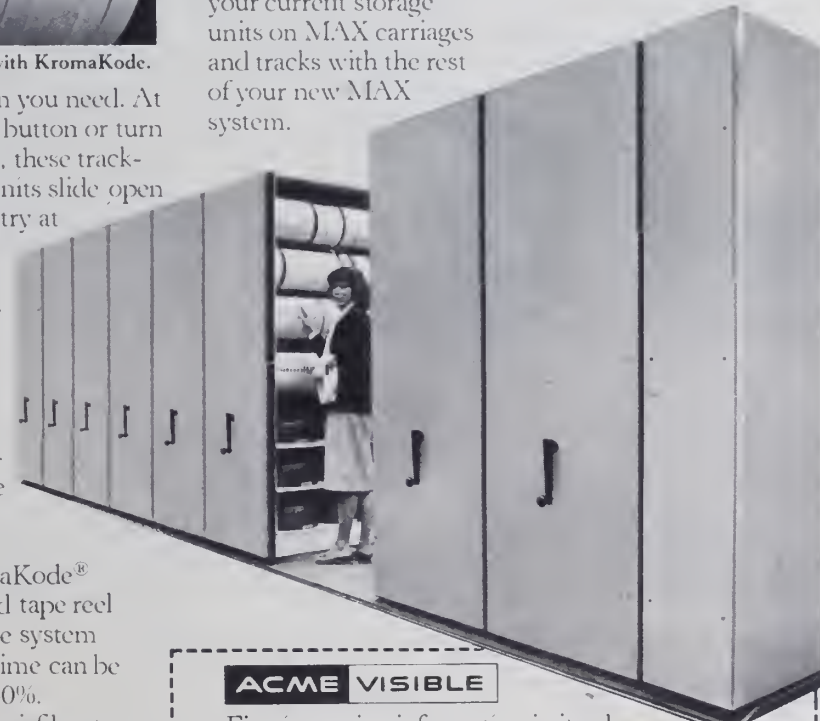
MAX utilizes new modular track and deck that mount directly on current raised flooring. Installation is fast and economical.

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gram. It starts the child at mode one, during which he does his own energy audit and enters the data into the terminal. The system maintains a file on each participating child. It selects one of four modes for the child, depending on the level of energy usage in his home. Using a map on the CRT screen, the child can see each room in his house, the appliances it contains and the usage and cost per day, per room.

A Dollar a Day

A homework assignment might be to save one dollar per day in energy costs. The child uses the terminal to select pieces to save and simulates that on the map. He chooses, for example, to turn off the television for several hours. He goes home and does this and comes back and measures the effect, using the terminal. "The kids are taking responsibility for load shutting," Phillips said.

The program also includes monitoring techniques that measure energy consumption in 117 of the students' homes through devices attached to their power meters. Data is collected on magnetic tape for processing in the central computer, which relays it to the school's terminals.

Esco manages the program through the nonprofit Community Energy Conservation Assoc. (Ceca). The pilot effort has cost about \$1.3 million to date. Primary funding has come from the Fluor Corp., Southern California Edison Co. and Esco, and there have been some in-kind equipment contributions.

Top of the World opened its entire curriculum to incorporate the energy conservation component, Phillips said.

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Mnemonic Plague MIS-tifies Sons of Glitches

By Tom Henkel

CW Staff

FRAMINGHAM, Mass. — MIS-managed DPer's, the sons of glitches, are fond of fiche and fear the mnemonic plague. The plague, it is rumored, runs rampant at Ma Bell's boudoir. But disk too shall pass.

No, *Computerworld* hasn't stooped to running gibberish — but you're close. It's button test time again, and the es-

teemed team of CW judges has just emerged laughing from a smoke-filled room with this year's winners.

While the CW judges declined to say what kind of smoke filled their sacred chambers, for the second year in a row they have done their job — narrowed some 2,000 entries down to six lucky winners.

And now the moment you've waited for. The six lucky win-

ners of a Microvision electronic game, one game cartridge and a mounted certificate guaranteed to impress someone, someday, are: "I've got mnemonic plague," by Maury Swoveland, Basic Four Corp., Burlingame, Calif.; "Bugs are sons of glitches," by Gary Kamrath, Burroughs Corp., El Monte, Calif.; "Fiche or cut byte," by Bob Lyon, Bechtel Power Co., San Francisco; "My company is

MIS-Managed," by John Tvedtnes, Hospital Information Systems Sharing Group, Salt Lake City, Utah; "Disk too shall pass," by C.S. Cochran, Magnavox Consolidated Electric Co., Knoxville, Tenn.; and "Ma Bell runs a boudoir house," by Maury Pepper, Computer Consulting, St. Louis, Mo.

Now for the bad news. There can only be so many winners, and alas, some good slogans

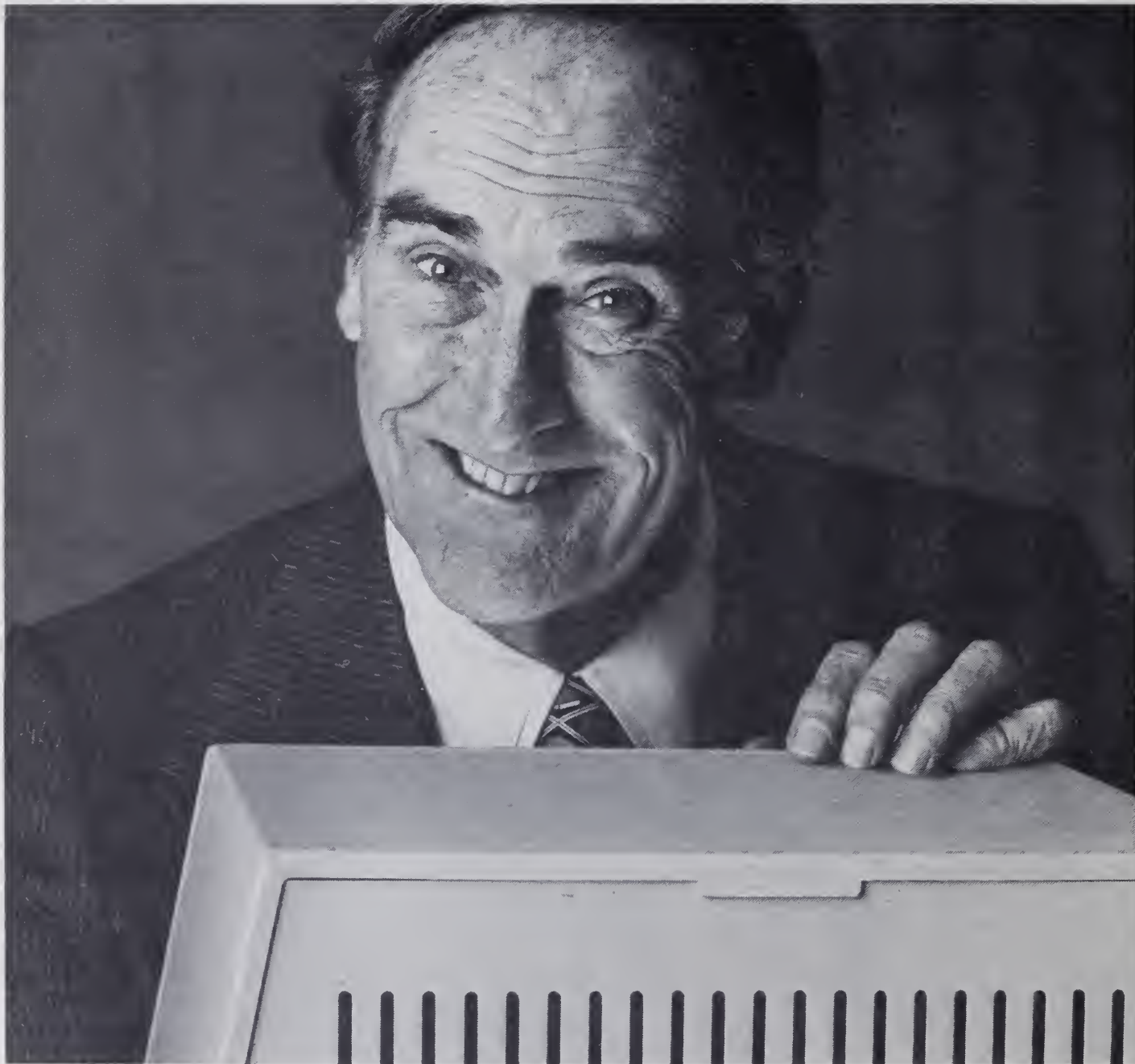
have to fall by the wayside.

For those unfortunates who were slighted by the judges' swift hand of justice, there's hope. Those who have risen to what has been called the "close-but-no-cigar club" will also receive the coveted mounted certificate.

CW also extends a heartfelt pat on the back along with a wish for better luck next time.

Certificate winners include:

- Wally Huffman, Prince William County, Manassas, Va. 22110.
- Mitch Snyder, Merck Sharp & Dohme, West Point, Pa. 19486.
- Judith E. McLaughlin, Home Curtain Corp. of Calif., Redondo Beach, Calif. 90278.
- Marilyn J. Lindholm, Los Alamos Scientific Laboratory, Los Alamos, N.M. 87545.
- R.W. LeFerts, Penn Mutual Life Insurance Co., Philadelphia, Pa. 19172.
- Robert Barcklow, Eastern States, Lake Success, N.Y. 10042.
- Ray Light, University of Nebraska at Omaha, Omaha, Neb. 68182.
- Chuck Collins, United Merchants Information Systems, Teaneck, N.J. 07666.
- Homer Lemke, Inland Steel 6-011, Chicago, Ill. 60603.
- Wally Huffman, Prince William County, Manassas, Va. 22110.
- John Ibbotson, J&M Enterprises, Anchorage, Alaska 99511.
- Larry C. Brown, Archbald Hospital, Albany, Ga. 31705.
- Robert Kurland, Citibank, New York, N.Y. 10005.
- Helen Lieberman, Philadelphia, Pa. 19116.
- D. Brewer Eddy, John Hancock Mutual Life Insurance Co., Boston, Mass. 02117.
- Lee McCracken, NCR Corp., Dayton, Ohio 45479.
- Sam Frizzell, S.S. Mary & Elizabeth Hospital, Louisville, Ky. 40215.
- S. E. Button, ACF Industries, Inc., Olivetter, Mo. 63132.
- A.M. Piermatteo, Naval Air Engineering Center, Lakehurst, N.J. 08733.
- Judy Aron, Travelers Insurance Co., Hartford, Conn. 06115.
- M.S. Stadick, City of St. Petersburg-DP, St. Petersburg, Fla. 33705.
- Phil Curry, Alvin Community College, Alvin, Texas 77511.
- H. Betan, Spiridellis & Associates, New York City, N.Y. 10028.
- Mr. B. McInnes, Cires, University of Colorado, Boulder, Colo. 80309.
- Robert A. Dombroski, Sperry Univac, Blue Bell, Pa. 19424.
- James Kirwan, Lowrey Corp., Deerfield, Ill. 60015.
- Kathy Littler, Morrison-Knudsen, Boise, Idaho 83792.
- John R. Green, Graco Manufacturing, Chaska, Minn. 55318.
- Don Schloeder, Southwest Sales Companies, Inc., Mesa, Ariz. 85202.
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'Chop First, Question Later' Too Costly Zero-Based Plan Predicts Impacts of Cutbacks

By Lois Paul
CW Staff

SYRACUSE, N.Y. — In this time of government cutbacks and threatened layoffs, the "chop first, ask questions later" philosophy can be costly in terms of essential service loss.

In the Onondaga County Sheriff's Department here, a computerized version of zero-based budgeting (ZBB) is reversing this approach by determining potential results of cutbacks first before reallocation of resources is tackled.

The plan has been designed and developed by Charles E. Gabriel, chief administrative officer for the department, who began working with the ZBB concept in early 1978. "I don't think there is such a thing as zero-based budgeting, practically speaking," Gabriel said, adding, "I don't think any operation really works at zero-based level."

His program is called Level X funding, "because you start out at some level of funding. I can treat our budget and our performance data in relation to levels of funding. I know how to address the impact."

Minimizing Losses

"The intent of ZBB was to wipe out a whole department," Gabriel said. It is not working that way in his department. Instead, it is "minimizing potential losses and maximizing the benefit of the buck."

Gabriel developed four key questions for each unit commander and structured these into a simple form. Each was asked to define the primary role, the secondary roles, criteria considered as a measure of success and the long-term objectives of the unit. The responses gave Gabriel's systems planning unit a method for organizing data.

"What has that unit done in terms of performance, for example, to decrease crime?" Gabriel said. "The zero-based concept crystallizes the need for what data is needed, how it will be utilized, what categories are necessary."

According to Gabriel, his adaptation of ZBB "captures the essence of it without going through the horrendous paper flow and forms that typically impact ZBB. That's why we structured this thing with the key questions which allow us clearly to identify key concerns."

Functional Data Base

The approach also developed a more functional data base, Gabriel said, and eliminated the constant shifting of data and creation of new files to address each new request and requirement.

All files in Gabriel's department have been "dumped" into the data base. Files are not recreated, but maintained. Gabriel's DP staff uses the Onondaga County's computer system, which consists of an IBM 370/145 and 370/148, operating on OSVS. It is an on-line system, although reports regarding ZBB are batch-oriented, he said. In the

criminal division, 12 units to date are part of Gabriel's program and have ongoing computer statistics.

In these areas, "from a pure budget concept, if information is requested as to the potential impact of a service cut, I can go through and make an inquiry based on statistics in the data base. I can make an assessment and gauge a reason-

ably good portrayal of the impact," Gabriel explained.

The new program provides a "top-down view of the budget. We can understand programs in terms of costs and output. It also has allowed us to establish internal audits of each category," he said. Overlaps of functions easily are detected and units can be questioned regarding their own

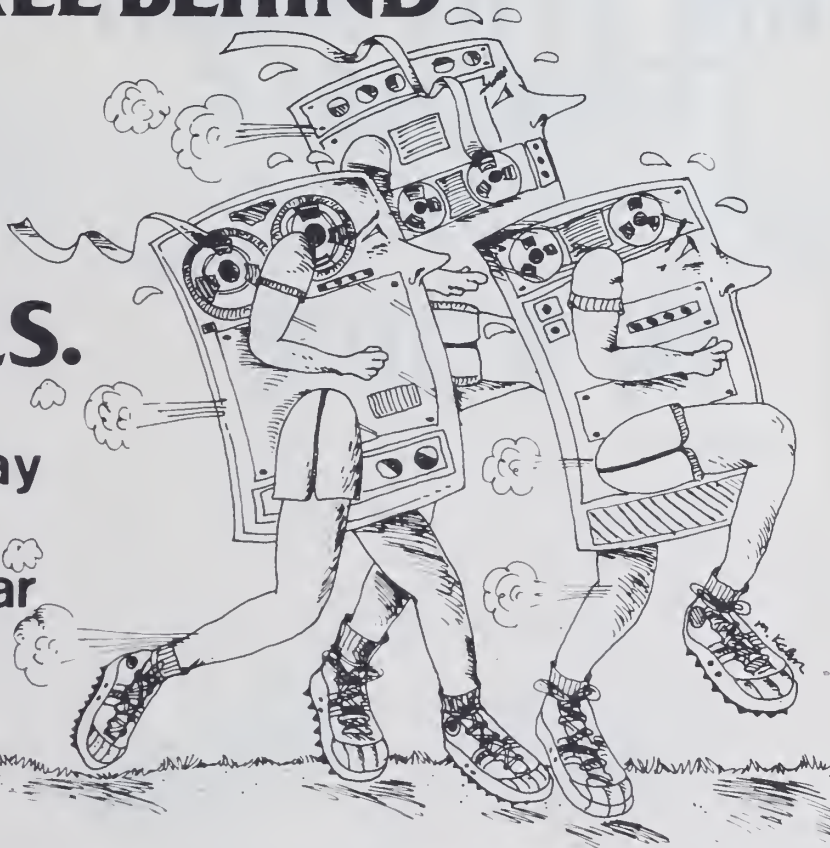
specific function.

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CW32

Short-Term, Five-Year Effects

White-Collar Productivity Viewed at Cusp

By Bruce Hoard
CW Staff

PALM SPRINGS, Calif. — White-collar productivity is on the cusp of dramatic change, yet the information worker of tomorrow is still as much a vision as reality, according to Dr. Lee Davenport, vice-president and chief scientist emeritus of GTE, Inc.

Davenport discoursed on a wide variety of subjects surrounding white-

collar productivity in an interview during the 28th annual meeting of the Industrial Relations Council of the

confidently in describing the short-term five-year effects of increased white-collar productivity. By 1986 an

CW at EIA

Electronic Industry Association (EIA) here last week.

The vice-president emeritus spoke

increasingly larger work force will find itself grappling with the burdensome problem of the incompatibility of office systems, he predicted.

And during that same time frame, voice-actuated systems will make their debut, granting welcome relief to the many top executives who were unable or unwilling to cope with the complexities of keyboards.

In five years secretaries and other clerical workers will also find themselves in need of retraining, Davenport said. However, such traditional educational resources as community colleges and secretarial schools lack the necessary sophistication.

Beyond the late '80s, "the crystal ball gets a little hazy," the retired chief scientist commented. Coming back to the present, he said today's white-collar work force has only "very slight recognition" of what lies in store for it. What will tip off many workers is the integration of more and more sophisticated hardware into the white-collar work place.

At the present time blue-collar workers in factories frequently work closely with \$25,000 and \$50,000 worth of equipment, while the figure for their white-collar counterparts is in the \$2,000 range, "and a lot of that is their chairs and desks," Davenport declared. The advent of word processing equipment will change that.

Not Without Problems

The transition to higher productivity will not be without its problems, he commented. Secretaries rooted in a paper-based office in which they are used to formulating whatever file system is convenient for them will have difficulty converting to electronic master files and their universal accessibility, he said.

The legal ramifications of paperless offices may also be difficult to iron out, he noted. "Imagine a trial when two lawyers hold out semiconductor chips to a judge and say, 'Here is our contract.'" But the former chief scientist made it clear the truck to future productivity would move ahead apace despite these obstacles.

Davenport took a different tack from many experts when he described the role of top management and the evolution of white-collar productivity. It is not the role of top management, he asserted, to overly involve itself with the acquisition and implementation of information systems.

Rather, top executives should delegate those responsibilities to subordinates, but they should fully assess proposed projects and their impacts. Management that receives an "infinite" number of calls from various departments vying for its attention cannot answer them all, he said.

Davenport defended the perquisites of top management again when he insisted today's keyboards and systems sign-on procedures are too complex and time-consuming for them. "The

human-machine interface is not yet simple enough," he declared. "It can take 30 to 50 keystrokes all in proper order to sign on to the system. These are not very forgiving procedures."

He seemed to take pride in the fact that engineers can and will overcome such needlessly complex tasks. "You can't push a button and have files available for you now, and that is wrong," he said.

The white-collar work force will increase, but Davenport declined to predict at what rate or when it will reach a point of equilibrium. He did predict the availability of more information-gathering capabilities would lead to higher demands for information processing in accordance with Parkinson's law.

And "we may eventually reach an information glut" in which humans could no longer assimilate data as fast as it was being accessed. Such a glut, he pointed out, is theoretical and not likely to occur.

Ultimately, the quest for white-collar productivity will lead us to the system whereby data will be created, recorded, transferred and absorbed by users without human "intrusion," Davenport explained. Perhaps the human voice, an excellent means of communication but irksome to store, will play a role, he surmised.

UPC Error Suit Settled for \$250

GRAND RAPIDS, Mich. — Meijer Thrifty Acres, a chain of supermarkets in Michigan, settled a suit for \$250, out of court, over a 14-cent pricing error that a customer noticed when the Universal Product Code (UPC) pricing system registered a higher price than was marked on an item.

Joseph Tuchinsky, codirector of the Michigan Citizens Lobby, filed suit in order to test a new Michigan mandatory pricing law that requires prices be marked on the items in addition to the bar code that the checkout scanners read.

Tuchinsky said he doubted he had been overcharged deliberately, but added the error was nonetheless damaging to consumers.

"We have yet to see a hardware malfunction error," said Timothy Crossman, a UPC specialist at Meijers. He said that from what he had been told the 14-cent overcharge was caused by a human error.

Tuchinsky said he settled out of court as Meijers undertook to improve its system to reduce the likelihood of customers being overcharged. The supermarket chain of 33 stores has scanners in 31 sites and cashiers receive about a day's training on the machines, according to Crossman.

Meijer's has been using scanners since 1977 and at present its NCR Corp. system consists of NCR 6060 and NCR 8250 computers with NCR 255 and NCR 2552 registers.

"The long-term hope is for the system to be used for inventory control," said Crossman, who is presently concentrating on getting all 33 Meijers stores fully operating with the scanners.

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Education Gap Held U.S.' Top Security Threat

By Bruce Hoard
CW Staff

PALM SPRINGS, Calif. — The huge gap between the Soviet Union and American education systems poses the most formidable national security threat this country has ever faced, according to University of Chicago mathematics professor Izaak Wirszup.

"Decreasing educational standards in the U.S. have led to an end of our dominance in auto and steel production and may also contribute to the downfall of U.S. superiority in computer science and manufacturing," he warned.

Wirszup hit his audience with one bombshell item after another during his talk before the 28th annual conference of the Electronic Industry Association's (EIA) Industrial Relations Council here recently.

Although quick to disparage the philosophical motivation behind what he called "the Russian drive toward supremacy," the professor was clearly impressed with the Soviet assault on education.

Downhill Trend

Declining productivity is at the root of the downhill trend in U.S. computer science and technology development, he noted. Japan and West Germany are moving ahead in computer science while the U.S. is turning out high school graduates "who barely have a conception of three-dimensional space," he added.

The Soviet education buildup is "unparalleled in history," and is aimed at serving the highly centralized Soviet system and strengthening the Communist party, Wirszup declared. It was launched Nov. 10, 1966 when the Central Committee of the party adopted a far-reaching resolution calling for the development of highly skilled labor pools.

The important resolution was "absolutely neglected in the Western world," the professor said. It established a two-tiered educational program designed to facilitate the secondary educational needs of all Soviet students, he added.

Both programs are based on a basic, eight-year, six-day-a-week curriculum starting at age seven. The first category encompasses the most academically proficient students and advances them through the ninth and 10th grades. From there, they are assigned to special advanced schools and trained either for teaching or other professional careers, he explained.

The second category takes the less scholarly students and places them in three- or four-year technical vocational schools from which the "highest productivity and inventiveness" in the country is developed, he claimed.

Seventy-one such schools existed in 1966, Wirszup said, adding there are now 3,700 schools with a total enrollment of over two million students.

Although only 5% of secondary students graduated during the Stalin era, 98%, or five million, yearly are currently earning degrees, the professor said. In the U.S., only 75%, or 3.15 million, complete high school each year, he explained. Those statistics, though disturbing, pale in significance when juxtaposed with the relative contents of the two countries' education,

the professor said.

Soviet children have compulsory obligations to spend six hours a day for five years on basic math. In addition, they must take five years of physics,

scorn for the state of mathematical learning in the U.S. While their Soviet counterparts are finishing up their basic math training in five years and moving on to more advanced courses,

written for soldiers with an 11th grade education. "They are now written for people with a sixth grade education," he commented.

Soviet educational superiority is especially evident in the standards set for secondary school teachers, Wirszup said. Teachers for grades one through three are required to have five years of algebra, 10 years of geometry and two years of calculus, he said.

Soviet students are taught by special math teachers from the third grade on, while U.S. students normally do not receive similar attention until junior high. And, if that's not bad enough, "There is one physics teacher for every two high schools in Chicago," he added. "The Soviet Union trains 8,500 physics teachers each year."

CW at EIA

four years of chemistry, five and one-half years of biology, three years of mechanical drawing and six years of foreign language courses, he said.

By comparison, 9.1% of U.S. high school graduates have had one year of physics, 16.1% one year of chemistry and 17.3% one year of general science, he claimed.

Wirszup saved his most strident

U.S. students are traumatized by nine boring years of math that cement their distaste for the subject and drive them away from future learning, he declared.

"That is a national disaster," he said.

To further underscore the pathetic state of American educational standards, Wirszup said military manuals for the all-volunteer army used to be

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Japan Cited as Role Model

State of Science Ed Viewed Crippling U.S.

By Bruce Hoard
CW Staff

PALM SPRINGS, Calif. — The miserable state of scientific and engineering education in the U.S. is crippling this country, according to U.S. Rep. George E. Brown Jr. (D — Calif.) and National Science Foundation (NSF) Director Dr. John Slaughter.

The two made their remarks at the 28th annual conference of the Electronics Industry Association's (EIA) Industrial Relations Council, held here last week.

Brown, who is chairman of the house subcommittee on Science, Research and Technology, cited the ubiquitous

our total spending for nonmilitary research and development.

These alarming statistics mo-

cially hard hit, he added.

In order to establish a broader sense of public understanding and technical literacy, the Democrat espoused the formation of university-industrial research consortia, in which academia and industry would exchange their human and technical resources. The results would be mutually beneficial for both parties, he claimed.

Lack of Interest

Sparked by the flight of Sputnik I in 1957, the U.S. launched itself into a science and engineering boom that spanned the '60s and '70s, Brown said. Since 1970, however, there has been a fundamental decline in interest that is now painfully evident across the educational spectrum. "Our schools are letting us down to the earliest level," he said. "We must upgrade that lost sense of confidence in a technically sophisticated society."

Ill-conceived management philosophy is another bane of scientific and engineering education, Brown declared. Again citing the Japanese, he said they have adopted discarded U.S. management techniques, such as good communications, and made them work again.

NSF Director Slaughter echoed many of Brown's sentiments, calling for a "re-

newed national commitment to excellence." He cited the shortage of computer science faculty and claimed there are currently 200 teaching vacancies in that field on the college level.

A similar crisis exists on the secondary school level, where math and physical-science teachers are few and far between, he said. "I think there is nothing more damning than to walk into a classroom and see science being taught by rote and by rule," he said.

Slaughter also decried the dearth of racial minorities and women within the scientific and engineering communities. Although women are making progress and now comprise some 20% of all engineering students, racial minorities lag far behind.

Only 4% of U.S. engineering students are from racial minorities, the NSF director added. Asians make up the bulk of that 4% group, meaning blacks, Chicanos and Hispanics are left to form a miniscule 1% of engineering students.

That situation is traceable to two social trends of the '60s and '70s, he declared. The nation's commitment to social equality in the '60s subsided in the face of the technological assault of the '70s. The country must now meld the two commitments into one, he said.

CW at EIA

Japanese in drawing a grim picture of U.S. engineering and scientific productivity.

Japan, with only half the population of the U.S., graduates as many engineers with doctorates yearly, he noted. In addition, the Japanese equal

tivated the California congressman to file legislation last year designed to create a national technology foundation patterned after the NSF. How this proposal will fare under the budget-cutting Reagan administration remains to be seen. Brown did not sound optimistic.

"Legislative desires have to be changed in accordance with political whims," he commented, "and the political whims have veered 180 degrees in the past few months."

What those political whims have blown in is an ax-wielding hurricane named David Stockman, Reagan's director of the office of management and budget. And the former Michigan congressman, referred to by Brown as "my old friend," has set his sights on federal subsidies for scientific and engineering education.

More specifically, Stockman proposed the elimination of all new initiative in the area, cutbacks of 20% in this year's budget and 40% in the next year's, the disgruntled congressman said. "Those proposals can't help but be counterproductive," he complained.

Although Brown applauded Reagan's desire to lift government restraints of big business, he warned against the effects of such freedom on the scientific engineering educational community.

Free market forces could exacerbate the already acute shortage of college faculty by making private enterprise irresistible to chronically low-paid academicians, he said. Computer science and electronics faculty would be espe-

Ulrich to Chair NCC Office Meet

HOUSTON — Walter Ulrich will chair a luncheon workshop entitled "Cost Justification and Measuring Productivity" at the Annual NCC Office Automation Conference to be held here March 23-25.

Ulrich is a specialist on the convergence of computers and communications, according to conference sponsors at the American Federation on Information Processing Societies (Afips).

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'Me Generation' a Challenge to Managers

By Bruce Hoard

CW Staff

PALM SPRINGS, Calif. — The "Me Generation" is here to stay, and that means new social values and new challenges to managers, according to Albert J. Yesk, senior vice-president of the social research firm, Yankelovich, Skelly & White.

Today's work force has divested itself of the old "puritan ethic" values of the '40s

and '50s, he said at the recent conference of the Electronics Industry Association's (EIA)

the classic nuclear family and the quest for leisure time, he said.

puritan ethic started breaking down because parents were less worried about the financial futures of their children.

However, that softening of attitudes led to the development of a "soft underbelly," Yesk said, and soon irrevocable social currents were swirling. By the early, pre-Vietnam '60s, there was a mild trend toward self-actualization; people were asking themselves, "Who am I?" he said.

After the political and social tumult of the late '60s, things had changed. By 1970, the old values were challenged strongly: 55% of the work force still clung to the materialism, upward mobility and work-related concept of masculinity of the past generation.

But 45% said, "no," they wanted to cast off the old ideas and focus on themselves, Yesk declared.

Ronald Reagan recognized that fact and used it to beat Jimmy Carter out of the presidency, he claimed. Carter called for sacrifice and the moral equivalent of war, a battle plan too harsh for most Americans to swallow. Reagan wanted to preserve the hard-earned American life-style, and that went down like candy, Yesk noted.

Women's Movement

The women's movement was a crucial factor in the eruption of new values, the vice-president said. By 1990, eight of 10 women will be working. In addition, 50% of U.S. households will have two people working and 75% of households bringing in \$25,000 or more yearly will be going it on the strength of two salaries, he claimed.

The women's movement also contributed to the "wide array of life-styles" that now mark American society, the vice-president declared. "It's important you realize you have a diverse work staff," he said.

"Only one household out of five now contains a classic nuclear family." That means benefit packages and other compensation have to be reshaped, he added.

The demand for meaningful work is another new phenomenon, Yesk said.

Only 13% of the people surveyed by his firm said they find self-fulfillment in their work. A much larger 64% said they realized self-fulfillment through nonwork activities.

"They're not thinking about what's there at work," he said. "They're thinking about racketball or fishing, and that means they're holding back or reducing their work commitment."

CW at EIA

Industrial Relations Council.

That means conformity, the family, love of work and, most importantly, self-denial are out. Replacing them are individuality, the dissolution of

Yesk traced the revolution of social values back to the end of World War II, when the U.S. started settling into what he termed "the psychology of affluence." At that point, the

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Prevention Recommended to Avoid EEO Suits

By Bruce Hoard
CW Staff

PALM SPRINGS, Calif. — Preventive maintenance is a most effective tool companies wishing to avoid equal employment opportunity (EEO) lawsuits have at their disposal.

So said Susan B. Davis, president of Successful Women, Inc., and attorney Walter B. Connolly, of Pepper, Hamilton and Scheetz, while speaking here recently. The occasion for their comments was the 28th Annual Conference of the Electronic Industry Association's (EIA) Industrial Relations Council.

Speaking to an almost exclusively male audience, Davis discussed several traditional barriers that employers must overcome if they are to have meaningful affirmative action plans relative to women.

Employers must eliminate the sex-role stereotypes they have of women, and stop thinking they work for money to the exclusion of career gratification, she said. In addition, employers must reconsider the notion that women with families are unable to coordinate those families with their careers. Employers must also realize that women are emotionally and intellectually qualified to perform jobs previously reserved for males, Davis maintained.

Davis admitted that some women create their own barriers. Women tend to have short-term as opposed to long-term goals, she said. "They look at jobs, rather than careers," she added.

Women also have a tendency to compete and not cooperate, she continued. That is the result of striving for male attention over the course of their lifetimes. And women are also hesitant to take risks, a trait that manifests itself in a propensity to place in a negative light things a man would consider to be positive.

Although it need not be a weakness, Davis claimed her studies of women on the way up the job ladder consistently evoked a word: lonely.

One of the biggest needs that working women have is for proper support systems within companies. These systems should include both female and male role models and voluntary seminars in which the two may get together and discuss their feelings, the president said.

She called for compromise and communication in the male/female crisis. "If we could learn to compromise a little better," she said, "I think that some of more serious affirmative action problems would go by the wayside."

Handling OFCCP

Connolly described a difficulty in winning EEO lawsuits brought by the Office of Federal Contract and Compliance Programs (OFCCP) and prescribed methods for avoiding them, methods, he said, companies should force on themselves.

Tactics of the OFCCP are as follows, Connolly claimed: its lawyers come in and compare male and female salaries; male salaries are usually higher, so OFCCP assumes there is discrimination. The facts also show whites are making more money than blacks, so again OFCCP sees the worst, the attorney said.

However, such tactics represent a "myopic approach" he asserted. In or-

der to prove that, companies in question must adhere to a strict personnel regimen that covers employees from the moment they apply to the end of

Connolly commented. Since around 1970 women and minorities have moved rapidly toward parity with men in terms of salary and job level. Com-

CW at EIA

their tenure, no matter how long that may be.

Federal investigators should take the subjects of education and seniority into consideration when prosecuting EEO cases against government contractors. People with more education deserve higher pay, just as do employees with more seniority, he said.

Historical trends are very important when evaluating EEO-type lawsuits,

panies should reflect that trend, he said.

Age discrimination cases will be "the single biggest issue of the '80s," he declared, and "it is a bitch to win one."

His advice for companies who want to lay off people but avoid age discrimination called for an effective system to evaluate people. The place to stop is with free layoff statistics: how many people are employed, and what

do they do? Secondly, identify the job functions to be eliminated.

After that, uniform guidelines must be established, he said. That means taking an even-handed approach to terminations. For instance, it is unwise to lay off people slated for early retirement, he warned. Next, determine what, if any, disparate impacts there would be on various segments of the work force.

Volunteers should be sought also, and lastly, meetings held with terminated employees to explain the situation and give them a chance to appeal, Connolly said.

All these need not be expensive, he added. "It doesn't cost a nickel more to do it the right way than it does to do it the wrong way," the attorney asserted.

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Are Present Salaries an Accurate Reflection

Q If a recent DP salary survey is accurate, our salaries are on a par with industry averages. My question is, are these salaries an accurate reflection of what DPers should be earning?

As a systems manager, my group provides services to every division in the company. User managers with approximately the same number of subordinates earn from 30% to 60% more than I, but their responsibilities are much more limited. Another interesting statistic is that my staff has a higher number of years of education than any similarly sized group in engineering or accounting.

Greater responsibility over more highly skilled people results in a lower salary. It just doesn't pan out.

A Existing DP salary levels are artificially low and salary surveys, although accurate and comprehensive, only perpetuate the unjustified differential in salaries paid to DPers and persons with commensurate responsibility and education in other fields.

There is no quick solution. The primary obstacle is corporate recognition of the scope of DP responsibilities. We are witnessing a slow but deliberate acceptance of DP as a separate and equal entity to the traditional functional areas. Equality in salaries will follow.

Q Can you provide some guidelines for estimating memory and disk storage requirements during the systems-analysis phase of a project?

A Because of the numerous system-design alternatives and optional hardware features, specific guidelines for estimating memory and disk storage requirements for a particular application system would not only be difficult to develop, but cumbersome to use. Identification of the considerations which affect the storage requirements is the key to making good estimates.

The following are considerations for disk space storage estimation: types and number of files (master, transaction, temporary, data base); file size and desired overflow area; on-line vs. batch; virtual memory requirements; systems and applications software (use historical data); average record length (for variable length records) for each file; records per track; type of file organization; need for standby backup devices; frequency to file reorganization; and fixed or interchangeable disks.

Although memory is much more difficult to estimate, it is usually not as critical since add-on memory units are more easily installed than disk drives. Considerations are resident application and systems software, type and number of partitions, virtual mode, required response time and/or turn-around time, buffer areas, on-line vs. batch and production scheduling requirements.

Estimates should be made within the context of the existing environment and not for an isolated application system.

Q I read with considerable interest your response in "Turn-around Time" in reference to increasing productivity in a management information systems (MIS) department. Like most companies today, this has become a major focal point of interest to us.

We are an MIS staff of approximately 140 servicing a highly diversified two-billion-dollar corporation. We are currently attempting to structure a two-year comprehensive program to improve our staff's productivity; utilize a home-grown system development methodology; incorporate increased user participation and responsibility; migrate toward user nonprocedural languages; and overall improve our

product, timeliness of production and service and credibility throughout the corporation.

If there are a few key points you feel might help us in our endeavors, I would be most appreciative to hear from you.

A You're talking about a complete overhaul of corporate MIS. To realize success in such an ambitious endeavor, attention to three areas is critical — MIS long-range planning, the system development methodology and user education.

1. Develop a comprehensive long-range plan for corporate information services. I use the word comprehensive to emphasize that a plan for information services incorporates not only

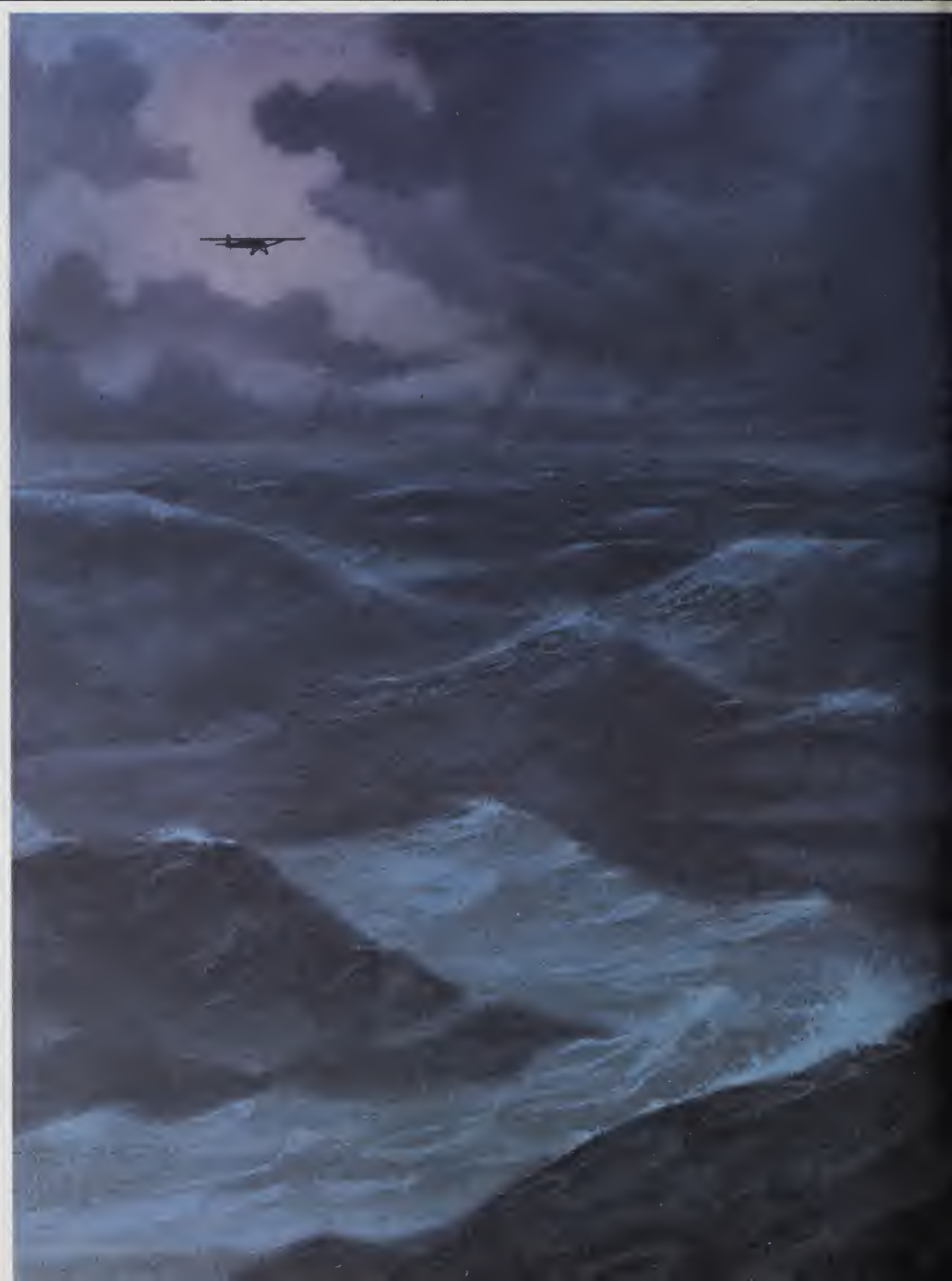
hardware and software, but policy, procedures, attitudes, people, education and so on — all necessary ingredients of the information service function.

2. Relative to the system development methodology:

- Integrate the user into the methodology. The user is as much a part of the development process as analysts and programmers.

- Keep it simple. A lengthy, complex methodology will either fail or be more trouble than it is worth. A person's willingness to use the methodology is inversely proportional to its complexity.

- The scope of the methodology should include a project management system. A system development meth-



of What DPer's Should Earn?

odology provides the opportunity and the framework for development and implementation of a project management system.

3. Implement an ongoing in-house user education program at all levels of the corporation. User awareness and knowledge of DP/MIS can be the key to successful implementation of your program.

Q After giving me six months of training in Cobol (on IBM machines), the consulting company that I am working for trained me in NCR Corp.'s Neat/3 language and assigned me to a project using this language. This is my first job in the data process-

ing field.

It seems that I may be assigned only to Neat/3 hereafter. I am comfortable with the language and the banking application. However, I am concerned about the desirability of continuing in Neat/3 in terms of flexibility and movement to better positions.

What is your opinion about the possibility of my qualifying for systems programming positions using basic assembly language (BAL) if I continue to work with Neat/3?

A I perceive a mismatch between your personal career objectives and those that management has set for you. Although indirectly complimentary, there is a world of difference between BAL systems programming and

applications programming in banking using Neat/3.

One rarely becomes an expert in the area of their initial assignment, especially in a consulting company. Approach your first assignment with vigor, learning everything you can. In the interim, discuss your long-term career goals with your manager. If you're successful in your present assignment, I would be surprised if your manager did not try to accommodate your career objectives.

Q I am interested in knowing what the following DP professionals do: programmer, programmer/analyst, systems analyst, software en-

Turnaround Time By Larry E. Long

gineer, systems programmer, MIS manager, EDP professional.

A The primary responsibility of most DP organizations is the development, maintenance and production support of computer-based information systems. Traditionally the three dominant job titles in the development and maintenance of information systems are systems analyst, programmer and user (who is organizationally attached to a functional area). The production function is accomplished by operations personnel.

MIS, DP, EDP, ADP, information services and information systems are used interchangeably even though subtle differences exist. Electronic data processing (EDP) has been shortened to DP with the assumption that most DP is electronic. The terms management information systems (MIS) and information services/systems are more contemporary terms used to reflect an expansion of the DP function to provide information for managerial decision making.

A systems analyst, or simply analyst, is responsible for analysis, design, conversion, implementation and evaluation of information systems. In theory, the programmer designs, codes and tests programs in accordance with specifications prepared and documented by systems analysts. Many companies prefer to combine the two functions, thus the programmer/analyst.

Software engineer is far from being an industry standard term. No two companies would describe the function of a software engineer in the same way. A software engineer could be anything from a programmer to one who deals with systematic methods and techniques for development of information systems.

Essentially there are two categories of programmers — applications and systems. In general, any reference to programmer implies applications programmer. The systems programmer is concerned with the design, development and maintenance of applications-independent software.

An MIS manager is anyone charged with the responsibility of managing any part of the MIS function. However, the term is sometimes used to refer to the individual responsible for all corporate information services.

You should be aware of the other career paths that this fast-growing field has spawned. I would recommend that you call a medium-to-large company, express an interest in pursuing a DP career and ask if they would have time to provide you with an overview of career opportunities.

Charles A. Lindbergh where are you now?

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Long is a professor at Lehigh University, a DP consultant and author.

Have a question? Send it to Larry Long, Editorial Department, Computerworld, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.

Most Precious Metals Lead Two Lives

By Bruce Hoard
CW Staff

Most precious metals have two lives, according to a recently published book by Michael Tanzer, president of Tanzer Economics Associates, Inc. (see story on page 25).

In *The Race for Resources, Continuing Struggles Over Minerals and Fuels*, he describes known reserves, or those which are technologically and economically feasible to retrieve, and the resource base, which is defined as "the total estimated amount of the

mineral in the earth's crust."

Referring to tables produced by the U.S. Bureau of Mines covering both areas, Tanzer described how long selected metals will last if they continue to be mined at four growth rates: 0%, 2%, 5% and 10%.

Gold Reserves

In the case of world reserves of gold, the table indicates reserves will be exhausted in 30 years at a 0% growth rate, 24 years at a 2% growth rate, 19 years at a 5% growth rate and 15 years

at a 10% growth rate. The annual production growth rate between 1947 and 1974 was 2.4%, the table notes.

Copper reserves are somewhat more abundant. At a 0% growth rate, they will last 56 years; 2%, 38 years; 5%, 27 years and 10%, 20 years. The 1947-1974 growth rate was 4.8%, according to the table.

Silver reserves are definitely on the anemic side: 0% growth rate, 20 years; 2%, 17 years; 5%, 14 years; and 10%, 12 years. The 1947-1974 growth rate, a low 2.2%

In contrast to silver, cobalt reserves are the most plentiful of the commonly used metals in computer manufacturing. At a 0% growth rate, they will last for 97 years; at 2%, 54 years; 5%, 36 years; and 10%, 25 years. Between 1947 and 1974, production increased at a 5.8% clip.

Palladium, a member of the platinum group of metals, will dwindle quickly because of high (9.7%) growth rate between 1947 and 1974. At a 0% yearly increase, it will last 117 years; at 2%, 61 years; at 5%, 39 years; and at 10%, 27 years.

Resource Bases

For those worried by these somewhat startling figures, there will be comfort in those describing the resource bases.

Starting with a 2% growth rate, gold's resource base will hold out for another 709 years. At 5%, the figure drops to a still impressive 307 years, while the precious metal will be around for 164 years at a 10% annual production rate.

Copper has a 772-year resource base at 2% growth; will last 322 years at 5%; and 177 years at 10%.

- Silver: 2%, 766 years; 5%, 330 years; and 10%, 176 years.

- Cobalt: 2%, 1,009 years; 5%, 428 years; and 10%, 227 years.

- Palladium: 2%, 944 years; 5%, 402 years; and 10%, 213 years.

Degree Program Includes Study Of Social Impacts

IRVINE, Calif. — A rare opportunity to work for advanced degrees in computer science while studying the social and organizational impacts of computing is available at the University of California, Irvine's (UCI) Department of Information and Computer Science (ICS).

Located some 30 miles south of Los Angeles and near the beaches of Orange County, Calif., UCI is the home of the Public Policy Research Organization (PPRO), a research institute devoted to analyzing the effects of computing on organizations, especially government agencies. Several ICS faculty members and graduate students work with PPRO in studying these effects, as do other researchers with faculty positions in other UCI departments.

Of the 17 ICS faculty members at UCI, three are specialized in the social and economic analysis of computing, including Rob Kling, the social impacts editor of the Association for Computing Machinery's *Communications*.

UCI grants B.S., M.S. and Ph.D. degrees in ICS and has access to three Digital Equipment Corp. computer systems — a PDP-1070, PDP-2020 and PDP-11/45 — and a Honeywell, Inc. Sigma-7 system.

The ICS faculty also emphasizes traditional computer science topics such as computer architecture, algorithms, artificial intelligence and software engineering.

More information is available from Graduate Admissions, Department of ICS, University of California, Irvine, Calif. 92717.

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Supply of Precious Metals Seen Tied to Hostile Nations

By Bruce Hoard
CW Staff

Judging from the remarks of several computer manufacturers and those of commodities specialists at the U.S. Bureau of Mines, the gold, copper, silver, palladium and cobalt used in computer construction will be plentiful and accessible for many years to come (see story on Page 24).

However, those same precious metals are tied to the political fortunes of the sometimes shaky or hostile governments of the countries from which they originate.

The Honeywell, Inc. Large Systems Division goes through some 2,000 troy ounces of gold a year, according to Bruce Elkington, manager of electro-mechanical purchasing. The firm uses the precious metal to plate printed circuits, literally "bathing" the boards in the liquefied substance.

Asked if he was concerned about future shortages of gold, Elkington replied, "I see no intimations of that at all."

The U.S. produced and refined 878,000 troy ounces of gold in 1979, according to U.S. Bureau of Mines commodities specialist John Lucas. That is just about one-fifth of total imports, which ran at 4,629,000 troy ounces over the same period.

"The supply has been fairly steady over the past three years," Lucas said, adding the high price serves as an impetus to mining. New finds are also bolstering the supply.

Major supplier countries, in order, include South Africa, the Soviet Union, Canada, the Philippines, Ghana and Zimbabwe, Lucas said. South Africa, which is mineral- and metal-rich, is not a stable place, according to Prof. Henry F. Jackson, who has taught political science at Columbia University and the University of California at Berkeley.

"I would say that at any moment the kind of violent eruption we've seen in the past few years, starting with Soweto in 1976, could happen again," he said of South Africa. There remains a "standing condition of explosiveness" with "no solution in sight," he maintained.

"Ghana is also an unstable regime," he said, adding, "There is a long history of instability in that country."

The professor was more optimistic about Zimbabwe. "I think it's going to become a stable system. Mugabe (the new prime minister) has ironed out most of their most urgent kinks inherited from the old regime."

In the event of a gold cutoff, the U.S. maintains no strategic stockpile, according to Lucas.

Copper Sources

Perhaps with that and the high cost of gold in mind, Honeywell is working on replacing gold and silver with the more easily accessible copper. The company's studies have focused on the compatibility and functional properties of copper thick-film conductors and dielectrics used for the fabrication of multilayered hybrid microcircuits.

National Semiconductor Corp., one of the nation's largest producers of silicon chips, is also a big gold user, said Bill Chaffin, engineering manager in National Semi's Automated Assembly

and Equipment Development Group.

The company is trying to escape its reliance on gold, Chaffin said. "Where you need electrical conduction and some thermal conduction, we've replaced gold with solder."

Copper is perhaps less precious to U.S. manufacturers because this country is nearly self-sufficient in its production. Far less expensive than gold, copper is used for interconnect purposes in the form of etchings on printed wire boards, according to Richard Herter, director of Technology and Process Engineering at Honeywell's Large System Division.

The U.S. produced 1,814,000 metric tons of the metal in 1979, according to W.C. Buttermann, another commodities specialist at the Bureau of Mines. Domestic consumption was 2,158,000 metric tons, leading to a 12% import reliance, he claimed.

Interestingly enough, scrap copper makes up about 50% of total U.S. consumption, said Bill Black of the Copper Development Association. And although three tons of overburden must be removed to obtain one ton of ore containing about .6% copper, significant amounts of gold and silver are also unearthed in the process.

"With gold prices the way they are, the gold pretty much pays for the whole process," Black commented.

Other major copper producing countries include Chile, the Soviet Union, Canada, Zambia, Peru, Zaire and Poland. The U.S. stockpile is "nothing to speak of," according to Buttermann, who said the government maintains 20,000 metric tons while industry has about another 229,000 metric tons on hand.

Like gold and copper, silver is used as a conductor and contact on integrated circuit boards. However, it seems to be falling from favor, according to Herter. "It migrates, leading to short circuits," he said. "And it also corrodes."

Bureau of Mines commodities specialist Harold Drake said the U.S. produced 38.1 million troy ounces of silver in 1979, compared to its consumption of 157.4 million troy ounces. Ninety-two-point-four million troy ounces were imported.

Cobalt Supplies

Computer industry consumption figures for silver, as for other metals, were not available. Nor would most manufacturers comment on how much of each they consumed.

Leading world producers of silver include the Soviet Union, Mexico, the U.S., Canada and Peru, according to Drake. The U.S. maintains a 139.5 million troy ounce stockpile, he added.

Palladium is another popular circuit board conductor and the U.S. produced a paltry 5,000 troy ounces in 1979. Meanwhile, consumption was 392,000 troy ounces, said James H. Jolly, commodities expert at the Bureau of Mines.

Although approximately 95% of world palladium production comes from the USSR and South Africa, Jolly was optimistic about new finds in the U.S. "Most of the action in new finds is in the U.S. and South Africa, and one very promising find in Montana could produce one-half to three-quarters of our requirements," he said.

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DG Moves Into Graphics With Dasher G300

WESTBORO, Mass. — Data General Corp. made its foray into the graphics market by announcing its Dasher G300 display and Trendview chart generation software.

Designed for use with virtually all of the company's processors, the G300, an intelligent, monochrome raster device, features a built-in high-level Graphics Command Interpreter (GCI). The GCI simplifies graphics programming and allows graphics programs to be written in any programming language, DG noted.

The GCI includes features such as plotting in polar coordinates, drawing arcs, filled rectangles and circles, filling any closed shape and relative positioning.

The Dasher G300 is fully compatible with and emulates the Dasher D200 alpha-

meric display. The Dasher G300 consists of a detached keyboard and a tilt-and-swivel display housing containing a 12-in. green phosphor screen.

The terminal can display 1,920 characters in 24 lines and 80 columns. Graphics images are plotted on a 640 by 240 pixel matrix.

Printer Port

The intelligent terminal has a printer port, which can be connected to a slave printing device. DG does not currently offer a hard-copy graphics printer for use with the G300, but intends to introduce such a printer in the near future, according to Abe Hirsch, graphics product marketing manager.

The Dasher G300 has an asynchronous interface for communication with any host

DG computer at speeds of up to 9,600 bit/sec. Both RS-232 and 20mA current loop interfaces are provided.

Although the terminal does not currently have color capability, there are fields available in the software to permit the addition of software for color capability, a spokesman said. For example, the solid fill capability available in the GCI is a main ingredient needed for color, noted Hirsch, who declined to comment on when DG would add color capability.

The device was designed for graphics applications in education, business, publication layout and low-end computer-aided design and manufacturing, Hirsch said.

Trendview Software

To enhance the application possibilities of its Dasher G300 DG introduced its Trendview chart generation software for turnkey graphics display in business and technical environments. Running on the full line of Eclipse systems, including the 32-bit MV/8000, Trendview allows Advanced Operating System (AOS) and AOS/VS users to present data in pie, bar and line charts.

Trendview software can be used in three modes. In the interactive mode, simple high-level commands describe the



DG's Dasher G300

desired chart characteristics. Completed charts can be stored for future use without recalculation.

The second mode takes the chart description from a stored file, and the third mode allows an application program to control Trendview through an Inter-Process Communications port.

The Dasher G300 terminal, including keyboard, costs \$3,900. It must be used with GCI, which has an initial license fee of \$500. The Trendview chart generation software is priced at \$3,000.

Delivery is 90 days after receipt of the order, DG said. DG is located at Rt. 9, Westboro, Mass. 01581.

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DG Pursues Graphics Sans Megatek

WESTBORO, Mass. — Although the expected acquisition of graphics systems supplier Megatek Corp. by Data General Corp. fell through in recent weeks, the mini maker made its entry into the graphics market recently.

The Megatek acquisition was seen as a way of entering the high-end computer-aided design and manufacturing market, noted Abe Hirsch, DG's graphics product marketing manager.

On the other hand, the new Dasher G300 graphics display terminal is designed primarily for less sophisticated graphics application.

No Impact

The Megatek deal in no way impacted DG's plans for this market segment, Hirsch explained.

Megatek's systems are priced at \$20,000 and above, whereas the Dasher G300 and accompanying Trendview software is priced at \$7,400.

While DG reportedly would still like to enter the high-end market, its plans for doing so are still under wraps.

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Insurer Sets Mark on 'Stag' for Claims Work

By Lois Paul
CW Staff

HARTFORD, Conn. — When you call the Hartford Insurance Group to learn how much of your root-canal work will be covered by your policy, you will not be subjected to "elevator music" while a processor scratches out manual computations.

A computerized claims payment program was introduced in late 1980 to provide faster and more accurate service to the company's agents and policyholders in group health plans. "It saves a lot of time and effort," John Russo, assistant vice-president and director of the planning and administration group, explained.

The System to Automate Group (Stag) handles 30,000 claims a month at seven of The Hartford Group's 11 claims payment locations nationwide. This amounts to 30% to 40% of the calculations and payments for medical, dental and disability, Russo said.

His own group of processors is completing 40 claims per day per person, as compared with the 22 per day they were able to complete manually. The 40-per-day figure was the program target, according to Russo.

The system stores information on coverage for each group policyholder, histories for each claimant and data, such as prevailing fees, by area. This data can be exhibited on a CRT terminal and new claim information can be added by the processor.

The Stag system is the first step in a five to 10-year company plan to computerize its applications. It was developed over a three-year period by a steering committee composed of Hartford's data processing and group claims departments and an outside consulting firm, McAuto System, subsidiary of McDonnell Douglas Automation Co.

Russo said the claims system was designated a first priority by the steering committee because it was judged the most cost beneficial and the

specific needs. The company's computer center consists of five in-house IBM 3033s and one 370/165. Peripherals include Raytheon Data Systems

went right and went up on time."

Considered a productivity enhancement rather than a means of replacing people, the Stag claims system frees claims processors to work with policyholders regarding areas requiring judgment. It also helps eliminate mathematical errors and assures consistency of claim payments, Russo said.

Next in line for computerization is a rating and proposal system, which will enable 29 sales offices to offer same-day quotes from the field, Russo said. The task-force approach is being used to develop this system, which is targeted for start-up in July 1982. "The Hartford expects to double in size in about five years," Russo said.

'Considered a productivity enhancement rather than a means of replacing people, the Stag claims system frees claims processors to work with policyholders regarding areas requiring judgment.'

most likely from a competitive standpoint.

The Hartford Group contracted with McDonnell Douglas for a group claims processing package and then had its own data processing department modify it about 30% to meet its

Co. 4103 CRTs and 3472 printers.

Stag claims was pilot-tested at the company's main office here before it was installed in six other offices. By May, it will be in operation at the other four locations, Russo said. "It was one of those systems in which everything

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FEATURE	Visual 400	Lear Seigler ADM-42	Perkin Elmer 1251	ADDS Regent 60	Hazeltine Executive 80, Model 30	Beehive DM30
ANSI X3.64 Specified	STD	NO	NO	NO	STD	NO
Set-up Modes Eliminate External Switches	STD	NO	STD	NO	NO	NO
Typomatic Solid State Keyboard	STD	NO	NO	NO	STD	NO
Detached Keyboard	STD	STD	OPT	NO	STD	STD
CRT Saver	STD	NO	NO	NO	NO	NO
Block or Underline Cursor	STD	NO	STD	STD	STD	NO
80 and 132 Columns	STD	NO	NO	NO	OPT	NO
Double Size Characters	STD	NO	NO	NO	OPT	NO
Smooth Scrolling	STD	NO	NO	NO	OPT	NO
Horizontal Split Screen	STD	NO	NO	NO	STD	NO
Video Attributes Require No Display Space	STD	NO	NO	NO	STD	STD
8 Area Qualifications	STD	NO	NO	NO	NO	NO
8 Resident Nat'l Char. Sets Including Line Drawing	STD	NO	NO	NO	NO	NO
Programmable Non-volatile Function Keys	STD	OPT	STD	NO	NO	NO
Display of ALL Control Codes	STD	STD	STD	STD	NO	STD
Insert Delete Line with Push Up or Down	STD	NO	NO	NO	NO	NO
Insert Delete Character with Push Right or Left	STD	NO	NO	NO	NO	NO
Select Editing Extent to Field, Area, Line, Page	STD	NO	NO	NO	NO	NO
20 mA Current Loop	STD	STD	OPT	OPT	OPT	STD
Programmable Message Framing (non-volatile)	STD	NO	STD	NO	NO	NO
Programmable Answerback	STD	NO	STD	NO	NO	NO
Baud Rates to 19200 BPS	STD	NO	NO	NO	STD	STD
Independent Xmit/Receive Rates	STD	NO	NO	NO	NO	NO
Printer Port Independent of Communication Interface	OPT	OPT	STD	STD	OPT	STD
Paging	OPT	STD	NO	NO	STD	STD

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Hartford Group To Interface With 'Access'

HARTFORD, Conn. — As part of a companywide plan to computerize its applications, The Hartford Insurance Group has reported it will initiate an agency-company computer interface program by next fall.

The Agency-Company Communication and Electronic Service System (Access) will enable independent insurance agents across the country who represent The Hartford to connect their office minicomputers to the firm's data processing systems.

According to Stephen S. Witt, assistant vice-president and head of the Access unit, the plan is being developed by an advisory committee comprised of Hartford agents from across the country "who are leaders in the use of minicomputers."

Negotiations reportedly have been completed with Agency Records Control, Inc., Insurnet and Redshaw, Inc. regarding their minicomputer software programs, which will permit interface with their systems beginning in the third quarter of 1981.

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Michigan Firms Sue Systems House, Qantel

By Bill Laberis
CW Staff

PONTIAC, Mich. — Three separate companies have jointly slapped a California computer manufacturer and a local systems house with a "six figure" suit charging faulty performance and delivery of software.

The suit filed in the State Circuit Court here claims that Qantel Corp. and one of its distributors, Datapro Corp. of Southfield, Mich., stretched the truth about the performance of Qantel's hardware using Datapro-designed software.

Schreiber Corp., Collection Management, Inc. and Microwave, Inc., all members of an ad hoc users group of Datapro customers, filed the suit. Each had contracted with Datapro, a dealer

of Qantel equipment exclusively, for turnkey systems which, they charged, never operated as warranted by Qantel and Datapro.

Main Target

While Qantel, a wholly owned subsidiary of Mohawk Data Sciences, Inc., has been named as a codefendant in the suit, it appears the main target of the users' enmity is Datapro.

"I would say that most of our gripe now is directed at Datapro, but we also feel that Qantel did not support its user base here as it had guaranteed," said Joseph Martin, president of Schreiber Corp.

Datapro has already responded in court to the charges lodged against it, categorically denying them all. Qantel

is scheduled to respond in mid-March, according to the users' attorney.

Qantel is the target of a \$3.5 million suit filed by a Long Island, N.Y., book

seller alleging faulty performance of a Qantel system [CW, Feb. 2]. However, there does not seem to be any connection between the two suits.

Headhunter's Net Stretches New York to California

By Lois Paul
CW Staff

BALTIMORE — A job hunter can walk into the office of a New York headhunter in the morning and by afternoon have an interview set up for a suitable position in California.

According to Computer Search International, Inc. (CSI) here, that is how it

works if the job seeker goes to an agency subscribing to its Career Network, an on-line interactive system that can match applicants with jobs nationally and, eventually, internationally.

Free Service

The nicest part for the applicant is that it costs nothing to take advantage of the network, which has the capacity to store a half million resumes and job descriptions, according to Noel Tyl, public relations representative for CSI. The \$2,400 fee for the service is paid by the recruiting firms.

The network has been available for two months and has 25 members to date, Tyl said, noting, "The service is done through blue-chip recruiting agencies and firms."

Client companies include Systech, Inc. in New York, Corporate World, Inc. in Memphis, Tenn., and Horizon Personnel Specialists, Inc. in Tulsa, Okla.

The Career Network uses Source Telecomputing Corp.'s Prime Computer, Inc. 750 system in McLean, Va. It has 1M byte internal memory and up to 300M bytes disk storage. "Just about anything can access the system," a Source spokeswoman said, noting that users of the network employ Apple Computer, Inc. Apple, Radio Shack Corp. TRS-80 and Commodore Business Machines, Inc. PET microcomputers.

Tyl said the majority of job seekers using the Career Network are in the \$22,000-and-up salary range. "It is not a demarcation or policy. It just seems to be fact," he said, adding, "A keypunch operator probably would not use this service."

Joint Meet to Feature Computer Science Ed

HANOVER, N.H. — A joint conference on computer science education will be conducted by the Association for Computing Machinery (ACM) and the Special Interest Group on Computer Science Education (Siegse) here March 27-28. The show was put together by Nercomp.

Existing computer science programs in the Northeast will be the topic of the conference, with a list of academic notables on hand to lead the seminar: Dr. Thomas Kurtz of Dartmouth, Dr. Caroline Wardle of the Wang Institute, Dr. Hoyt Warner of Trinity College, Dr. Larry Quigley from the Commonwealth Center for High Technology/Education and Dr. Joel Moses of MIT.

Registration for the conference is \$45 for ACM members, faculty and staff of Nercomp member institutions and \$125 for all others.

Additional details can be obtained from Nercomp headquarters at 385 Elliot St., Newton Upper Falls, Mass. 02164.

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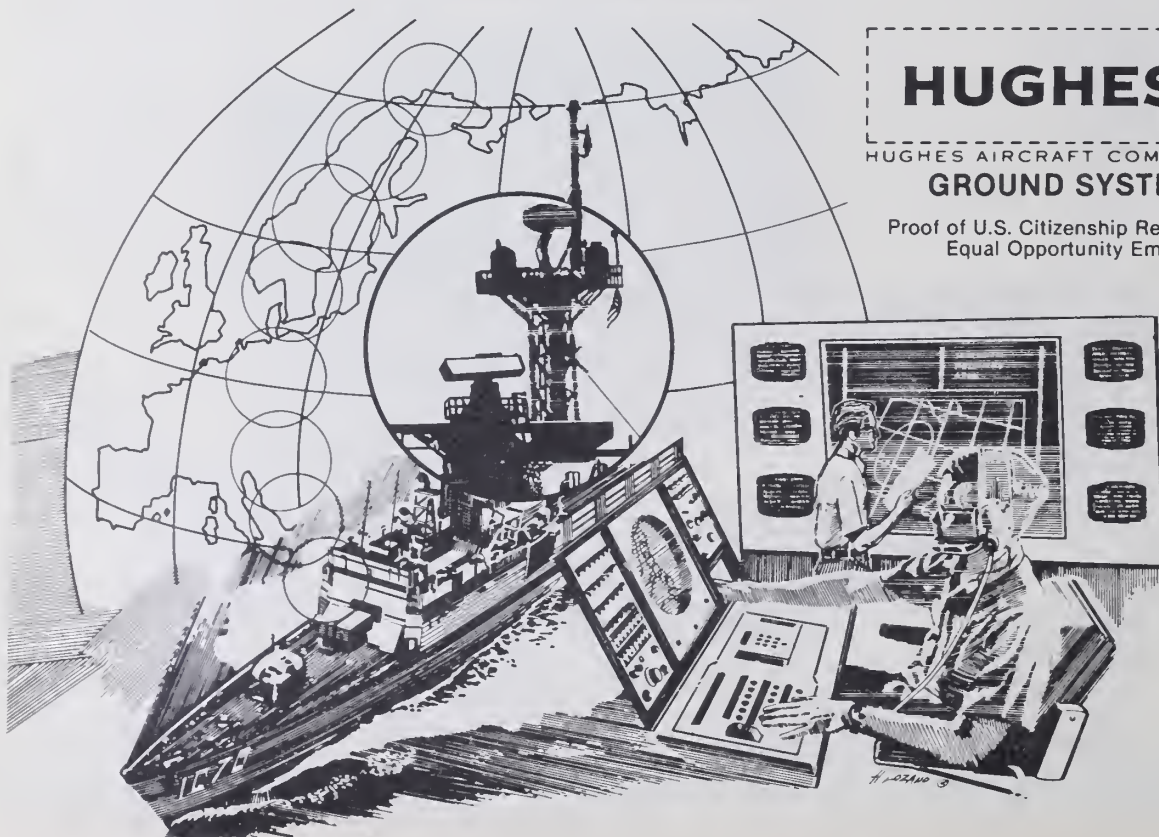
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Soviet Emigres Provide Plentiful Work Force

NEW YORK — In an effort to solve its programmer shortage problem, a software firm here has tapped a relatively new and plentiful data processing work force by hiring Soviet immigrants.

Within the last five years, 45,000 Soviets have settled in the New York area and are seeking jobs with the help of a federation of Jewish philanthropic organizations.

By hiring two of these immigrants, Sophya Goldlyust and Boris Nuzbrokh, Commercial Software, Inc. (CSI) is bucking what is viewed by some as an unpopular practice, noting the current state of high unemployment in the U.S.

Joe Raff, CSI's second-in-command, stated that the company has received complaints about its decision, but he pointed out that although unemployment in general is high, jobs in programming are numerous.

Goldlyust and Nuzbrokh, who were hired within four months of each other, are adjusting extremely well, according to CSI. Although communication was difficult at first because of obvious language barriers the company was surprised at the Russians' technical expertise, and Tony Abbott, president of CSI, has no compunction about hiring qualified Soviet immigrant DP personnel in the future.

Both programmers were educated at five-year universities in the USSR, although in different cities, and both have had training in many technical areas. In the USSR, computer sciences are closely related to the engineering

sciences as far as academia is concerned, according to Nuzbrokh.

Formal Experience

Their formal computer experience was on IBM 360 series hardware and a Soviet-built copy of the 360 called the "Ruta."

On-line services were not used in the USSR at the time Goldlyust and Nuzbrokh were working and they noted how working on-line at CSI is advantageous to productivity. "The debugging of a program in Russia could take sometimes as much as two days because of the time difficulty," Goldlyust revealed.

Although students do have a choice

in what they would like to study, they must show an aptitude for the subject. Those interested in DP, as these two programmers were, must submit to a three- to four-hour examination in mathematics, which includes written and oral parts. Of all the students who apply to a Soviet university only one out of 10 is accepted.

Goldlyust worked in a large data center in a small town outside Moscow after graduation. State policy is for the graduates to be sent wherever they are needed regardless of personal preference. "It was a very hard time for me, I did a lot of crying when I was told to work in that small town," she said.

A graduate of a polytechnical insti-

tute in the USSR, Nuzbrokh worked with engineers and at times was the only programmer working for 16 engineers.

With software backgrounds in Cobol, Goldlyust and Nuzbrokh stated that the differences in programming and symbols are miniscule. However Nuzbrokh added that, "The Russians do not have one person who can create a complete copy of an IBM software package. It is much easier to copy hardware than software."

He also told of a federal information system being produced in the USSR that will offer data nationwide, which potentially could be a problem because of the lack of Soviet software skills.

Techies Coveted For Manager Jobs

NEW YORK — Technical people with managerial skills are increasingly in demand, according to a survey of 210 major companies conducted recently by R.W. Consultants, Inc.

Not surprisingly, it is firms within the electronics and energy fields who covet this new breed of manager the most. And although companies are attempting to develop such people in-house, it is common to look on the "outside," the survey found.

That means other companies and academia, said R.W. Consultants President Robert Book. "Rapidly changing technologies are really changing the complexion of business," he said, adding today's managers need to combine business with technical expertise.

Book acknowledged technical people frequently fail as managers because of their misanthropic tendencies, but maintained those who consider management a "hassle" are not being asked to lead.

By looking internally, companies are seeking out technical people who are willing to move up the management ladder and acquire the business acumen that it requires, he said.

As far as credentials are concerned, companies are interested in people who have a strong technical base at the undergraduate or graduate level, the president maintained. In addition to that, they should have a "track record of accomplishment" within the organizations where they have worked.

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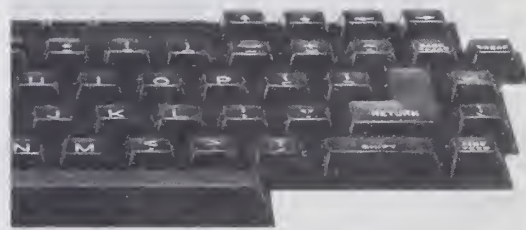
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FCC Inquiry to Scrutinize Bell R&D Setup

By Phil Hirsch

CW Washington Bureau
 WASHINGTON, D.C. — The Federal Communications Commission (FCC) has begun an inquiry that could have profound impact on the competitive relationship between AT&T and the computer industry.

One reason most of the industry criticizes last December's Computer Inquiry decision is because of the provisions relating to research and development (R&D) activity. AT&T operating companies must offer "enhanced" services and "competitive equipment" through separate subsidiaries, and can not cross-subsidize the activities of the subsidiary with revenue earned from "basic" telephone services.

But the subsidiaries are allowed to conduct a wide variety of R&D activities jointly with Western Electric and/or Bell Labs. The latter two organizations are also allowed to continue doing "basic" R&D related to telephone network services for the operating companies. Thus, there is at least a possibility that, despite the decision, the two types of R&D activity could be financed at least partly out of telephone network revenues.

According to the critics, this possibility is increased by the arrangement under which the operating companies pay for R&D work performed for them by Bell Labs and Western Electric.

The operating companies are as-

essed an annual "license contract fee" by AT&T headquarters, which they then recoup from their customers. However, the nature of the work purchased with this fee, and the cost to AT&T of doing the work, is not disclosed, and probably isn't even known except in a general way.

That is because each operating company is charged "an allocated share of the total costs . . . associated with providing license contract services." Thus, there may be no direct connection between what an operating company pays and what it receives. Also, it is at least possible that in the future a hidden cross-subsidy for the separate subsidiaries could be added to the total cost figure.

changes in AT&T's license contracting arrangements. For example, instead of assessing each operating company an "allocated share" of total license contract service costs, the commission has proposed that AT&T determine and disclose the actual costs of providing each service, and then charge each operating company a fee based on the services it receives. These costs, as well as the determination of the related fees, would be the subject to review by an outside auditing agency.

Also, the commission wants all R&D funded by license contract fees to be published twice a year and made available to the public. This requirement "should encourage the proper categorization of monopoly and competitive R&D (and) should help to ensure that only that R&D which is for the benefit of all users is charged to all users."

Comments on the commission's proposal (Docket 80-742) are due May 11.

Close Loopholes

The basic aim of the newly announced FCC inquiry is to close these loopholes by making a number of

British, U.S. Firms Launch Prestel Marketing Campaign

By Phil Hirsch

CW Washington Bureau
 WASHINGTON, D.C. — A marketing campaign aimed at promoting British Videotex/teletext technology in the U.S. was launched here last month. With obvious relish, Richard Hooper, head of Britain's Prestel organization, reported that field demonstrations of rival videotex systems developed by France and Canada have been delayed. These delays should make Prestel more attractive to telephone carriers, publishers and other prospective U.S. purchasers of the British technology, he said.

Hooper and Dr. Dill Faulkes, president of Logica, Inc., spoke at a British embassy press conference where it was also disclosed that a U.S. firm, Wolfdata, Inc. of Ithaca, N.Y., will begin delivering a low-cost Prestel terminal

in April. Known as the UVW-1200, the terminal is designed for business applications. It includes a full-ASCII keyboard and decoder and also has automatic dial-up and log-on capability. The terminal will sell for \$600 without a modem, said a Wolfdata spokesman.

Prestel, along with British teletext technology, will be marketed in the U.S. by British Videotex and Teletext (BVT), headquartered in New York, a newly formed joint venture between Logica, Inc. and British Telecom.

BVT plans to market Prestel as a turnkey system to U.S. telephone, cable and broadcasting companies, as well as to large companies and other organizations that need to communicate internally among a number of locations. BVT will also push other products, including Context, an advanced version of the British Broadcasting Corp.'s teletext system, popularly known as Ceefax. Faulkes reported that Context already has been sold to one U.S. customer, but he declined to provide further details.

L.A. Teledon Trial To Begin Next Fall


LOS ANGELES — A field trial of Canada's Telidon videotex system will begin here next fall. Sponsored by the Times Mirror Co., publisher of the *Los Angeles Times*, the trial will deliver a wide variety of information on-line to approximately 200 home television terminals located in Los Angeles.

The trial will involve transmission of Telidon-formatted information over both telephone and cable channels. A Digital Equipment Corp. VAX-11/780 will provide logical control and data base storage.

Telidon, developed initially by the Canadian government, is being marketed by two major Canadian publishers — Torstar Corp. and Southam, Inc. — through a joint-venture organization called Infomart. Infomart's U.S. subsidiary, Telidon Videotext Systems, Inc., is located in Stamford, Conn.

The latter company is supplying the hardware/software for the Los Angeles field trial.

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'Outrageous Flight Into Fantasy' Bank Scoffs at Report Tying Heist to DP Fraud

By Bill Laberis
CW Staff

SAN FRANCISCO — A recent *Time* magazine report charging that an alleged \$21.3 million embezzlement from the Wells Fargo Bank here was a computer swindle has been dismissed by the bank as a "totally misleading and outrageous flight into fantasy."

The bank, however, refused to comment on just how the heist was carried

off, pending the outcome of a Federal Bureau of Investigation probe into the bizarre events swirling around what may be the biggest bank job ever.

Meanwhile, Wells Fargo has filed a \$21.3 million suit against phantom boxing promoter Harold J. Smith, whom the bank contends engineered the alleged theft along with bank employee Benjamin Lewis. The suit also named the men's wives as well as Mu-

hammad Ali Professional Sports (Maps), of which Smith was chairman and Lewis a board member.

Sammy Marshall, Maps president and also a former Wells Fargo employee, has also been named in the suit. So far no arrests have been made nor warrants issued, the FBI in Los Angeles said.

"I can't say too much now, but I can say that this was not, repeat, was not, a computer fraud," said George Caulfield, information officer at the bank. "It was a well-executed scam, but not at all what *Time* said it was."

And well executed it apparently was. Caulfield said the "manipulation" began in mid-1979 and was detected only as an "irregularity" earlier this year by a bank employee, not by one of the nearly 100 DP auditors at the bank.

Caulfield proffered further that the alleged swindle involved 13 Maps accounts in two California branch banks, one in Santa Monica and one in Beverly Hills, and was done cleverly enough to elude customary bank audits. What is worse, the money may be long gone, frittered away on Maps' well-documented losing fight promotions and on Smith's reportedly extravagant, cash-consuming lifestyle.

The bank's contention that the fraud was not a computer theft has been supported both by computer fraud experts and by an informed source close to the investigation.

thereby establishing itself as a viable depositor. The bank, like other major banks, allows its big depositors to overdraw their accounts by a certain percentage of actual deposits, in accordance with bank policy regarding its large depositors.

A bank insider, Lewis ostensibly would have been privy to this policy. He then could have overdrawn the Maps account by some amount, depositing the new draft into a second account, Bologna theorized. The second account would then likewise be overdrawn by an amount even greater than the first overdraft and deposited into a third account, with some of the growing fraudulent proceeds being used to cover the overdraft in the first account, staying one step ahead of the auditors.

Eventually the scam pyramids and potential fraudulent gains in the bulging accounts multiply. Up to \$21.3 million without being detected?

"It's possible in the classic kiting scam, which is really a pretty simple thing involving electronic data entry that could have easily been done manually," Bologna said. "A computer scheme involving 13 different accounts in different banks would mean corrupting more than one person inside. That would be pretty tough over a long period of time in a big bank."

At press time, the flamboyant Smith, who once enticed boxing's heavyweight champion Larry Holmes with a pillowcase stuffed with \$500,000 in cash was still hiding out. Through his lawyers and through radio talk shows he has proclaimed his innocence, saying that he is the fall guy in a larger, \$200 million swindle involving state auditors and Wells Fargo management officials.

The FBI declined to say whether it has taken Smith's charges seriously. The bank said it is insured for all but \$1 million of the reported loss.

Crime Expert

"I can't see it as a computer crime per se because it would have been almost certain to be picked up a lot earlier if it had been," said Jack Bologna, computer security management consultant. "It looks more to me like kiting, which is no new scam at all."

In line with the kiting scheme, Maps or one of its principals would have deposited a large lump sum, perhaps \$500,000 in a Wells Fargo bank,

'Smart' Patrol Cars Help Police Apprehend Three Murder Suspects

CHICAGO — A patrolman driving a police car equipped with a mobile computer terminal stopped a car going the wrong way down a one-way street here, ran a computer check on the California license plate and shortly afterward apprehended the car's three occupants on a charge of suspected murder.

Once the license-plate number was keyed into the terminal, the information was transmitted over VHF airwaves, specially granted by the Federal Communications Commission, to the Chicago Police Department headquarters. A switching device at the computer center there digitized the radio message request, and it was then processed through the computer networks that link law enforcement agencies.

The Federal Bureau of Investigation-operated National Criminal Information Center (NCIC) sent back a message, which, when displayed on the patrol car's CRT terminal read, "Stop that car and hold all the occupants."

Further investigation showed the car belonged to a murdered woman's mother, and a search turned up evi-

dence that the car's occupants had been in the town where the murder took place.


According to Lt. Bill Alexander, administrative aid to the superintendent of Chicago's police department, it takes about six seconds to process a request made by computer as opposed to a phoned-in request, which can take up to 15 minutes.

Smart Car

A fully equipped patrol car with a Motorola, Inc. Special Mobil Radio Terminal (Smart) costs \$15,000. The terminal, which consists of a radio transmitter, a computer head with a keyboard and a buffer memory box, costs about \$4,000, Alexander said.

The major problem was static on the airwaves that made it difficult to convert a radio-transmitted message into computer-readable form. The messages are now sent five or six times until enough information for the computer to process gets through. The patrolman sending the message, however, only keys it in once, according to Alexander.

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FCC Implements Tariff for Dataspeed 4540

WASHINGTON, D.C. — AT&T's Dataspeed 4540 tariff became effective Feb. 15, after the Federal Communications Commission's (FCC) common carrier bureau turned down objections from the Independent Data Communications Manufacturers Association (IDCMA), which represents manufacturers of competing equipment.

IDCMA objected mainly to the "variable-term pricing plan" (VTPP) included in the tariff — alleging, among other things, that it will cross-subsidize the costs of the Dataspeed 4540 with revenues earned from other services, which is illegal under the Communications Act.

Under VTPP, users who lease the 4540 for 24 or 48 months are guaranteed protection against rate increases that could be imposed on those who lease the equipment for one month.

The association argued that if some Dataspeed 4540 customers are exempted from future rate increases,

AMA Series Set On Data Systems

NEW YORK — A series of information systems and technology meetings will be conducted in a variety of cities by the American Management Associations (AMA) in March.

"Basic Project Management: Planning, Scheduling and Control," will take place here March 2-5; in Chicago, March 9-12; in Boston, March 17-20; and in Phoenix, March 23-26.

"Fundamentals of Data Processing for the Non-Data Processing Executive" is scheduled for San Diego, March 2-4; New York and Chicago, March 9-11; St. Petersburg, March 16-18; and San Francisco, Phoenix and Philadelphia, March 23-25.

"Improving Automated Payroll Systems" will be given in San Francisco, March 16-18, and "Improving Office Productivity: Analysis and Design Techniques for Manual Systems" will be given in Denver, March 9-13.

Fees for these meetings range from \$530 to \$775 per person, with AMA membership and group discounts available. Further details can be obtained from AMA World Headquarters, 135 W. 50th St., New York, N.Y. 10020.

Adapso Plans Meet On Business Issues

ARLINGTON, Va. — "Business Challenges of the '80s" is the title of a day-long seminar sponsored by the Association of Data Processing Service Organizations, Inc. (Adapso) slated for March 3 in New York.

A three-member panel that includes Jerome L. Dreyer, president of Adapso; John Weber, chairman of Monchik-Weber Associates, Inc., a New York-based software house; and Jack Courtney, executive vice-president of Computer Task Group, will host sessions on improving financial controls, marketing issues and software development.

Registration costs \$125 for Adapso members and \$200 for nonmembers. More information is available from Adapso, 1300 N. 17th St., Arlington, Va. 22209.

Datacomm Briefs

users of other AT&T services will have to make up the loss. The phone company's answer was that "in no event" will it increase existing rates.

The 4540, an improved version of AT&T's Dataspeed 40/4 keyboard/CRT terminal, is priced up to 10% below IBM's 3270 terminal.

Charges for the 4540 range from \$128/mo to \$360/mo, depending on the payment plan selected. The new terminal is designed primarily for highly interactive applications involving communications between a central, computerized data base and remote terminal locations.

AT&T Exec Denies Monopoly Powers

WASHINGTON, D.C. — On-line information technology is changing so quickly that "no monopoly will ever be possible," according to Edward M. Block, AT&T's vice-president for public relations.

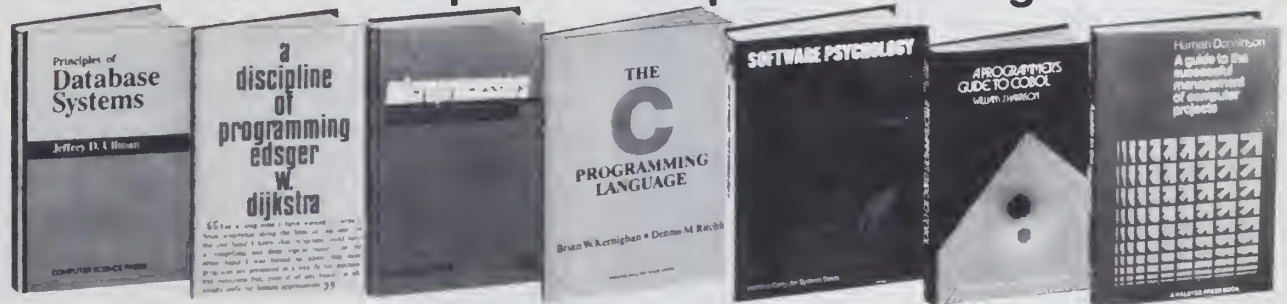
Responding to an editorial in *Editor and Publisher*, Block added that the phone company, even if it wanted to use its monopoly to control the information services market, wouldn't be able to do so because of Federal Com-

munications Commission (FCC) rules and legislation likely to be passed by Congress. The aim of both is to require that telephone companies "open up their network to all vendors of information on equal terms and conditions."

Block also said that newspaper industry opposition to AT&T's upcoming trial of an electronic home information system in Austin, Texas, is misplaced. Bell is merely trying to find out "how customers in the real world would respond to electronic information services," he explained.

"Until customers have an opportunity to experience such services, it is not possible to know what kinds of information may be marketable at what price."

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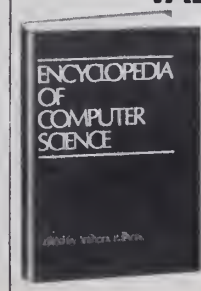
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March 30-April 1, Cleveland — **Data Processing: An Introduction to Concepts and Systems.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

March 30-April 3, Boston — **Structured Systems Analysis and Design.** Contact: IST, Ninth Floor, 888 Seventh Ave., New York, N.Y. 10106. Also being held April 6-10 in Toronto and April 6-10 in San Francisco.

April 1-2, Dallas — **Printed Circuits Production Expo.** Contact: Industrial & Scien-

tific Conference Management, Inc., 222 W. Adams St., Chicago, Ill. 60606.

April 1-2, Richmond, Va. — **Communications in the 21st Century.** Contact: Joyce Kravitz, Philip Morris, Inc., 100 Park Ave., New York, N.Y. 10017.

April 1-2, Los Angeles — **Optimizing Long Distance Services.** Contact: *Business Communications Review*, 36 South Washington St., Hinsdale, Ill. 60521.

April 1-3, Houston — **1981 Peripherals Supplies Exhibition.** Contact: Exhibition Manager, Peripherals '81, IPC Exhibitions Ltd., 40 Bowling Green Lane, London EC1R ONE, U.K.

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April 1-3, Lake Buena Vista, Fla. — **Computer Contracting — A Practical Guide.** Contact: Lynette Pauley, International Computer Negotiations, Inc., 1331 Palmetto Ave., Winter Park, Fla. 32789.

April 1-8, Hanover, West Germany — **The Hanover Fair '81.** Contact: Information Center, P.O. Box 338, Whitehouse, N.J. 08888.

April 2-3, San Francisco — **Software Quality Assurance.** Contact: Software Research Associates, P.O. Box 2432, San Francisco, Calif. 94105.

April 2-3, Troy, N.Y. — **Minicomputer Data Base Management Systems: The Latest Development.** Contact: Seminar Administrator, School of Management, Rensselaer Polytechnic Institute, Troy, N.Y. 12181.

April 2-3, San Francisco — **A Systems Approach to Project Documentation.** Contact: T. Jess Seiple, Carnegie Press, 100 Kings Road, Madison, N.J. 07940. Also being held April 9-10 in Chicago, April 14-15 in Washington, D.C., April 23-24 in Los Angeles and April 30-May 1 in Boston.

April 3-5, San Francisco — **The Sixth West Coast Computer Faire.** Contact: Computer Faire, 345 Swett Road, Woodside, Calif. 94062.

April 5-8, Huntsville, Alabama — **High Technology and Us.** Contact: Institute of Elec-

trical and Electronics Engineers, Inc., 603 Bain Drive, Huntsville, Ala. 35803.

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April 5-8, Nashville — **Electronic Computing Health Oriented.** Contact: Robert Gibson, Echo, Vanderbilt University Medical Center, Suite 305, 3200 West End Ave., Nashville, Tenn. 37232.

April 6, New York — **Telecom Trends and Developments in 1981.** Contact: *Business Communications Review*, 36 S. Washington St., Hinsdale, Ill. 60521.

April 6-7, Los Angeles — **Managing Documentation and Documentation Standards.** Contact: T. Jess Seiple, Carnegie Press, 100 Kings Road, Madison, N.J. 07940. Also being held April 9-10 in San Francisco, April 21-22 in Dallas/Fort Worth and April 23-24 in Philadelphia.

April 6-7, Boulder Colo. — **Device-Independent Computer Graphics.** Contact: Carol Brady, Precision Visuals, Inc., Suite 303, 250 Arapahoe Ave., Boulder, Colo. 80302.

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April 7, College Park, Md. — **The State of the Art of Software Development.** Contact: Laverne Papien, Center of Adult Education, University of Maryland, College Park, Md.

April 7-8, New York — **Advanced Management Skills for Telecommunications Professional.** Contact: *Business Communications Review*, 36 S. Washington St., Hinsdale, Ill. 60521.

April 7-8, Phoenix — **Computer Security and Privacy Symposium.** Contact: Honeywell Information Systems, P.O. Box 6000, M/S B-24, Phoenix, Ariz. 85005.

April 7-8, New York — **SAS Two-Day Basics Course.** Contact: SAS In-

stitute, Inc., P.O. Box 8000, Cary, N.C. 27511.

April 7-9, Rosemont, Ill. — **Computerized Office Equipment Expo.** Contact: Industrial & Scientific Conference Management, Inc., 222 W. Adams St., Chicago, Ill. 60606.

April 7-9, Topeka, Kan. — **Management of Structured Projects.** Contact: Ken Orr and Associates, Inc., 715 E. Eighth, Topeka, Kan. 66607.

April 7-9, New York — **Electro/81 Show and Convention.** Contact: Robert Myers, Communications Counsel, 999 N. Sepulveda Blvd., El Segundo, Calif. 90245.

April 7-9, Chicago — **International Conference on Computer Capacity Management.** Contact: The Institute for Software Engineering, Suite 200, 535 Middlefield Rd., Menlo Park, Calif. 94025.

April 8, Hartford, Conn. — **Teaching New Technology.** Contact: Kathleen Dolan, CPI, 111 Ash St., E. Hartford, Conn. 06108.

April 8-9, Boulder, Colo. — **DI-3000 Users Group Meeting.** Contact: Carol Brady, Precision Visuals, Inc., Suite 303, 250 Arapahoe Ave., Boulder, Colo. 80302.

April 8-9, Madison, Wis. — **Management By Objectives Seminar.** Contact: Prof. Dale D. McConkey, Management Institute, University of Wisconsin-Extension, 432 N. Lake St., Madison, Wis. 53706.

April 8-10, Washington, D.C. — **Audit Control in the Data Base Environ-**

ment. Contact: Stephanie Gaubatz, Program Manager, RHY Consultants, 1444 Balsam St., St. Paul, Minn. 55122.

April 8-10, Washington, D.C. — **DP Project Management: A Practical Approach.** Contact: Seminar Department, Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075. Also being held April 22-24 in Boston.

April 9, New York — **Major Mistakes in Communications Management ... And How to Avoid Them.** Contact: *Business Communications Review*, 36 S. Washington St., Hinsdale, Ill. 60521.

April 9-10, San Francisco — **Requirements Specification with SREM.** Contact: Software Research Associates,

P.O. Box 2432, San Francisco, Calif. 94126.

April 9-10, New York — **How to Franchise.** Contact: Heidi E. Kaplan, Department 20 NR, University Conference Center, 360 Lexington Ave., New York, N.Y. 10017.

April 9-12, Dallas — **Southwest Computer Show & Office Equipment Exposition.** Contact: National Computer Shows, 824 Boylston St., Chestnut Hill, Mass. 02167.

April 10-11, Blacksburg, Va. — **Eleventh Annual Conference — Personal Computing and System Performance.** Contact: J. Rosow/S. Halde- man, VCUC 11, 562 McBryde Hall, VPI & SU, Blacksburg, Va. 24061.

Battelle Institute Studying Intelligent Credit Cards

COLUMBUS, Ohio — A six-month research study to examine the future application of wallet-sized plastic cards with built-in microprocessor and computer-type memory is being conducted by the Battelle Memorial Institute under sponsorship from 24 international banking, telephone, oil and high-technology companies.

For \$9,000, the institute, a nonprofit research organization headquartered here with facilities in London, Frankfurt, West Germany and Tokyo, will produce a state-of-the-art report on what project manager John Farrell calls "intelligent credit cards."

"I view this as a sort of task force approach where we will have the participants explain their needs and we will see how the cards can be best adapted for their technical, administrative and marketing needs," Farrell said. "What I see happening here is a number of industries being able to use these cards."

The study will forecast near- and long-range uses of the cards by various industries. It will discuss applications that, according to Farrell, could replace traditional payment methods and perform other functions without overburdening large on-line computer networks.

He suggested the cards could be used as convenient substitutes for travelers checks. Instead of carrying bulky notes on long journeys you could purchase a card for a specified amount and use it to buy goods. The card would be inserted into a point-of-sale terminal that would automatically deduct the value of a purchase from the

amount programmed into the card.

Though such systems are not in operation anywhere at present, the French government has sponsored a pilot project, to start at the end of the year, where three different intelligent cards, manufactured by European companies, will be tested by banks, shopkeepers and customers.

Farrell said the intelligent cards had security advantages in that built-in self-destruct commands could make duplication almost impossible.

Organizations may still participate in the study. More information is available from Battelle Memorial Institute, 505 King Ave., Columbus, Ohio 43201.

Data Security Software Topic of Free Seminar

LOS ALTOS HILLS, Calif. — The Data Security Software Seminar Series is a complimentary program being conducted in a number of locations by the Cambridge Systems Group.

This month, the course can be attended in Toronto, March 4; in Montreal, March 24; Chicago, March 25; and finally in Charlotte, N.C., March 26. It is recommended for anyone involved in the management, installation or implementation of systems, operations or DP auditing.

Registration and further details can be secured from The Cambridge Systems Group at the Center for Software Development, 24275 Elise, Los Altos Hills, Calif. 94022.

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EDITORIAL

Not for Men Only

People attending conferences generally enjoy listening to a speaker whose delivery is both informative and amusing.

But at whose expense should the amusement be derived?

At a recent conference sponsored by *Business Week*, one speaker, a high-ranking executive, chose to compare implementing an office automation system at his company to the experience of having sexual relations with a woman met on a business trip: It's not the greatest, but it will have to do if that's all there is.

It is not unreasonable to assume that at least some of the women attending this conference found that comparison offensive.

Admittedly there were few women to offend. Of the 100 or so management information systems (MIS) managers, strategic planners, financial officers and other types of executives attending the conference, fewer than 10 women were listed on the delegates' roster. The speaker's ease at rattling off a raunchy remark in a large crowd is a further manifestation that the executive suite is still largely a "men's club" — a place where men relate only to other men.

This incident was not an isolated event. Women attending conferences are frequently subject to off-the-cuff off-color remarks by male speakers that peg women in a role miles and centuries away from the executive suite.

DP is one profession in which women have made major strides, at least into middle management positions. Hopefully many of these women will be able to reach executive levels within their companies.

Computerworld covers a wide range of conferences and industry developments and is read by professionals and executives of both sexes. We hope women will be considered valuable and respected members of the executive "club" and will not have to stand around gritting their teeth while the "good ol' boys" have their fun.

DATA PAST

Five Years Ago
March 1, 1976

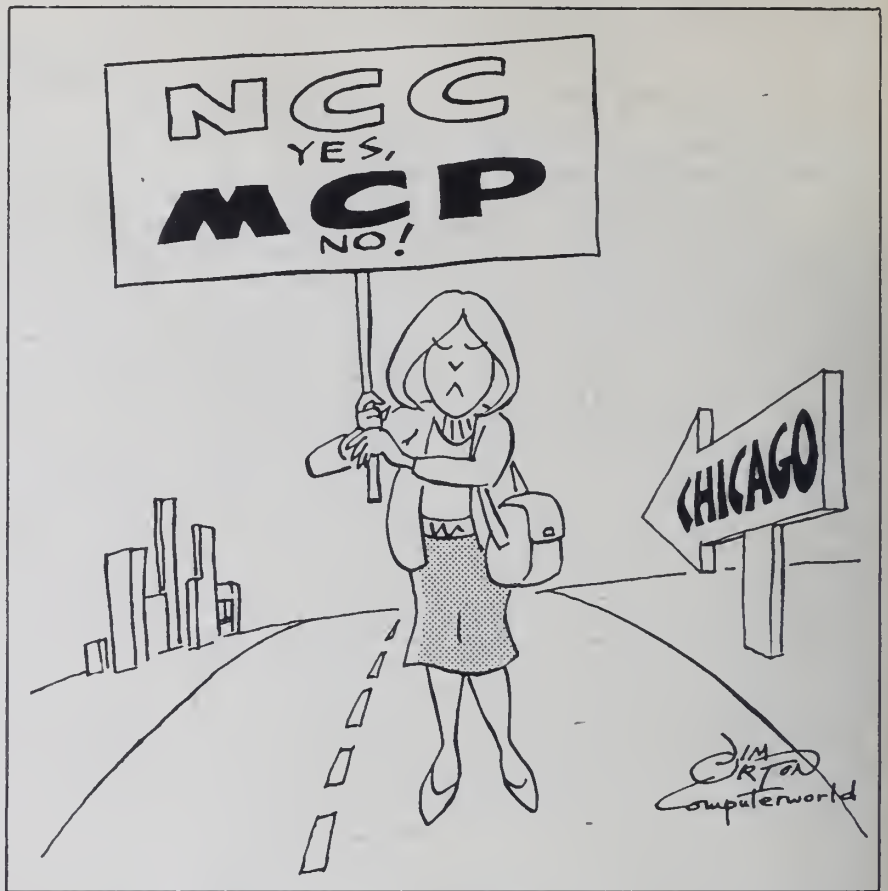
SAN FRANCISCO — Continuing growth in the use and sophistication of DP systems but little in the way of innovation were viewed as the prospects for the next five years, according to a panel of speakers at the IEEE Computer Society Comcon 76 spring meeting. Changes in the typical installation's mode of operation would occur, they agreed, but the changes will be based primarily on technology that has already been developed.

MANCHESTER, N.H. — To predict election outcomes for TV audiences when only partial returns were in, NBC-TV's John Chancellor, David Brinkley and their writers needed access to millions of bytes of data on the particular election involved, as well as historical information on voter performance and preferences in the past. Broadcasting the results of the New Hampshire presidential primary from a temporary studio at the Sheraton Wayfarer Inn here, writers had access to a computer network that tied the studio to NBC's mammoth DP Center in Cherry Hill, N.J., network headquarters in New York and the News Election Service (NES) computers in Concord, N.H., and New York.

Ten Years Ago
March 3, 1971

WHITE PLAINS, N.Y. — IBM announced the addition of two programming languages and three hardware options to the IBM System/3 Model 10 that would change this system from a small-scale replacement for tabulating equipment to a full-fledged general-purpose computer. The new Cobol and Fortran compilers allowed the System/3 to be considered by users who previously had to go to the 360/30 or non-IBM systems such as NCR Corp.'s Century 50 or Sperry Univac's 9200 for language compatibility. An increased memory capacity, new disk device and the availability of the 1403 printer enabled the Model 10 to be offered to a much broader range of users.

LOS ANGELES — University computer centers were in deep financial trouble, according to the National Science Foundation (NSF), and the first one to close was predicted to be California Institute of Technology's center. Cal-Tech was expected to run a \$1.5 million deficit in 1971. Dr. John Pasta, director of computer activities for the NSF, acknowledged that NSF was cutting off categorical grants for support to computer centers.



LETTERS

National Driver Register

I am writing in regard to "Driver Data Bank Proposed Amid Privacy Fears" [CW, Feb. 2], which described my proposal to streamline and strengthen the National Driver Register (NDR). I want to correct several misimpressions which may have been created about my bill.

The register, an index bank of drivers whose driving privileges have been revoked or denied by a state, was established in 1961 to help identify drivers with repeated traffic violations. Forty-two states currently have statutory provisions that prohibit the issuance of a driver's license to any one whose license is under suspension or revocation. The NDR is the only mechanism that allows a state driver licensing official to determine with a single inquiry if a person has a past record of poor driving practices in other jurisdictions.

Under my proposal, the current index system would be changed to a referral-type system, supported by quick-response electronic communications equipment. All substantive data on the driver will remain in the state — only the identification data and the name of the state of record would be sent to the register.

From the privacy standpoint, this means the overall reliability and integrity of the data would be improved because states would have complete control and management over the actual driving records.

The National Highway Traffic Safety Administration has recently completed a comprehensive report on the potential advantages of this proposal. The primary improvement concerns the timeliness of the information. Notification of the existence of a driving record in another state will be provided within 60 seconds vs. the 10 to 14 days under the present system. In other words, the driving record of the individual will be accurate up until the

point of inquiry.

The report concludes that the referral-type system is the most preferable of all the alternatives considered because it provided the "highest information usability level at the lowest cost of all the systems compared."

The proposal has received encouraging support from a wide range of interest groups, including state motor vehicle officials, national trucking organizations and magazines and citizen public safety groups. I believe it to be a positive step in providing adequate means for states to obtain complete, accurate and usable driver records in carrying out their driver licensing responsibilities.

Rep. James L. Oberstar
Washington, D.C.

Disclosed the Truth

I cannot get over how many people misinterpreted the fine article "Kickbacks, Gifts, Sex for Jobs" [CW, Jan. 12].

Users, recruiters and professionals should expect that there are good agencies as well as bad ones, just as much as there are bad users and bad professionals.

It's up to the people who use agencies to do it intelligently, investigating the agency in question (unless they know the agency well) as they would check someone's references.

Computerworld did a very good job in disclosing the truth instead of covering it up.

Joseph Mangraviti
New York, N.Y.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters should be addressed to Editor, *Computerworld*, Box 880, Framingham, Mass. 01701.

SOFTLINE/Werner L. Frank

Not So Basic Anymore

Basic started out as the "Beginner's All-Purpose Symbolic Instruction Code," but it is no longer necessarily a programming language for the neophyte.

Still simple and easy to learn, Basic has grown dramatically in breadth and depth since its mid-60s introduction as a programming tool for the noncomputer professional in the university time-sharing environment.

Actually, Basic was more of a return to an initial subset of Fortran, defined and contained in an early IBM document, the "Fortran Primer." The important distinction for Basic was not so much formal language and syntax as its introduction for operation in the emerging conversational and interactive timesharing environment. And that's really what simplicity was all about — the convenience of entering a line at a time statement under the power of an on-line edit program and the subsequent execution of that code in an interpretive environment.

Basic was fun and easy to use because

of the convenient and simple language facility that operated in a substantially improved and friendlier user environment.

Obvious Choice

While Basic has evolved into many more complex forms and capabilities, these fundamental attributes are still present. That's why it became the obvious first choice in programming facility for the microcomputers entering the personal computing marketplace. Basic has kept up with the times, and the associated language statements, functions and commands not only encompass conventional data processing needs, but also provide capability to control and execute processing related to graphics, color presentation and sound. These latter features are a contribution of the microprocessing industry to the entire computing world.

We take note of how simple and elegant Basic can be. It allows for arithmetic and Boolean operations on both numeric and character strings, and a

good slice of typical computing can be accomplished with only seven statement types — namely CLEAR, LET, INPUT, IF ... THEN ... FOR ... NEXT and, despite the prejudices of today, the GOTO. What more can the beginner need and want?

The rest of the process can all be automatically provided via easy-to-use keyboards and screen which facilitate:

- Syntax checking.
- Edit functions.
- Statement sequencing.
- Program execution.

TRS-80 Basic

The spread of Basic capability can readily be seen in one family of language offerings as, for example, the Radio Shack line for the TRS-80 computers.

There are actually four Basic programs offered by the manufacturer of the TRS-80, apart from competing compilers available from independent sources. These systems are Level I and Level II for the Model I computers, an

interpretive and compiler version for the Model II line and an advanced system for the Model III.

Level I and II are resident in read-only memory (ROM) as is the Model III Basic. The system for Model II is random-access memory (RAM)-based. Level I includes 26 statements plus a few variants, having the capability of video graphics, screen and cassette I/O integer and floating point arithmetic, a single numeric array operation and two string variable representations. The system has very primitive edit capability.

On the other hand, Level II Basic operates much faster and with additional I/O facilities to communicate with printers and disks. Level II includes more than 75 commands, statements and functions plus some variants, as well as a richer capability in error detection, double precision arithmetic, longer string length, a good file edit capability and more flexibility in labeling of both numeric and string variables, files and arrays.

In a mini disk environment, Level II is extendable to a RAM-based Disk Basic with commands suitable for operating with random or sequential files and possesses some other, additional facilities.

For Models II, III

This brings us to the Model II and Model III Basic. These Basics are further discussed on Page 42.

READER COMMENTARY/Floyd McWilliams

History Shouldn't Hold Us Back

I read with great interest Thomas C. Jaycox's Reader Commentary, "Some Predictions the Pundits Skipped" [CW, Jan. 26], particularly his second prediction, concerning data base technology. He said that data base technology, as we know it today, will not even exist 10 years from now.

I am not going to disagree with Jaycox. In fact, he is to be admired for his bold predictions. But his listing of the

that list, however, the important items to most practitioners today are the last seven.

Now that we've lived with data base long enough to gain a fuller appreciation of it, what was initially important about it is no longer so important, as Jaycox noted, but what we have learned about data base *after it was invented* becomes more and more important to us.

McWilliams is technical manager of the New York State School Computer Services System.

The full worth of a technology is discovered long after the technology is discovered. The implications of this maxim for technical managers are far-reaching.

perceived needs that led to data bases past — that "memory had to be conserved through better file organization and minimal data redundancy" — illustrates a profound truth about the development of technologies and their subsequent applications.

According to *An Introduction to Database Systems* (second edition, Addison-Wesley), the advantages of data base are:

- The amount of redundancy in the stored data can be reduced.
- Problems of inconsistency in the stored data can be avoided.
- The stored data can be shared.
- Standards can be enforced.
- Security restrictions can be applied.
- Data integrity can be maintained.
- Conflicting requirements can be balanced.
- Data independence can be achieved.

This list is interesting because only one item, the first, was mentioned by Jaycox and that same item, along with the need for direct access, implied by Jaycox, was the main impetus to data base historically. When one looks at

Nor is the history of data base an isolated example of a technology and what we make of it; rather, data base evolution is but one example of a process at work. A few more examples are CRT terminals, compilers, mainframes, microcomputers, operating systems, programming languages, report generators and time-sharing. Any information processor worth his salt should be able to triple this list with a day's reflection.

This is too important an observation not to make it into a maxim for technical managers: *The full worth of a technology is discovered long after the technology is discovered or invented.* The implications to technical managers are far-reaching.

First, the history of a technology, however interesting, should *not* determine whether or how we use that technology in the future.

Second, we should not let one or two attributes of a technology, however useful today, determine the future applications of that technology. Further implications are left to the creativity of the reader.

READER COMMENTARY/Ron Armstrong

Were You Cut Out For Management?

This article was prompted by an interview I had recently with a very bright young woman programmer. She has worked for a very large engineering and construction firm here in Houston for six months. She now makes about \$20,000 a year, is thoroughly miserable and wants out of data processing and into sales.

When I questioned her about her decision to leave DP and move into sales, she replied, "I am bored coding Cobol all day long. There is no mobility in data processing... Women aren't promoted into management."

Why was an obviously bright person so soon disenchanted with DP? To answer this question, I have been compiling personality traits of people in various professions, most specifically in DP, and have determined that the personality that makes for a good programmer often makes a poor manager.

Three Styles

As I see it, we have three styles of personality: our parent style, our "OK" style and our stress style. Within each of these styles are four traits which can be pictured as colors, each representing certain ways of reacting toward our surroundings — people, tasks, planning or organization. For the sake of simplicity, we have color-coded these reactions

within each style as red, yellow, green and blue.

Our parent style of personality is the one given us by our parents or those who guided us as children. We are taught how we "should" react to given situations. As an example, "Good little boys don't do that," or "Good little girls do this."

As we get older, the parent style remains intact, but we begin to develop our own independent "interest" or how we would prefer to react to given situations. We enter into this style when we feel comfortable and confident in our own ability, capacity and experience to cope with the situation.

When our "interest" needs are not met or we feel threatened, we move from the OK style into "not-OK" style. All of us have experienced this from time to time, when the paycheck isn't going far enough, the job is a hassle, the kids are sick, the car breaks down. We move back and forth, into and out of the individual personality dimensions. We tend to move into the parent style when moving into unknown situations and back into OK style when we feel comfortable and confident and then, when threatened, into our stress style.

We mentioned the color codes within each style and will give a brief description on Page 40.

Irresponsible Ad

I have enjoyed reading *Computerworld* for years. It is the pinnacle of DP trade journals. For that reason, it was disturbing to find such a superior, widely circulated paper containing such a shoddy piece of irresponsible advertising as the ad placed by Personnel Data Systems, Inc. in the Jan. 26 issue.

As one who specializes in marketing software for a large time-sharing organization, I pay close attention to advertising and the power it possesses. The wording and illustration in this particular ad are an insult to our industry.

Praying for an individual's soul is communicating with the God of the universe about eternal matters of grave consequence. It is *not* something to be used tongue-in-cheek as a "catchy" sales pitch.

I regret the poor judgment exercised by Personnel Data Systems; but I equally regret *Computerworld's* allowing an ad of such poor taste to taint its reputation.

Jill Rodick

Prairie Village, Kan.

Can't Program Plunkett

Regarding Bud Goode and his Fortran program [CW, Jan. 19], it is clearly time to place DP sports prognosis in the class where it belongs: with tea leaves, crystal balls and puppy dogs' tails.

You can't program pride, poise and Plunkett.

T.J. Down

San Jose, Calif.

LETTERS

Better Bet the Opposite

Shame on *Computerworld* for falling under the hype of Bud Goode. Many unsophisticated organizations, of which CW, I guess, is one (along with *The New York Post* and *Sports Illustrated*), have been offering his football predictions over the past couple of years.

To give credence to any prognostication, he is touted as a computer expert who also has the ear of most NFL coaches, and an impressive list of all his correct predictions of the past is given (never the incorrect ones, of course). In addition, a detailed explanation as to factors that went into the prediction is printed, as if it were gospel.

If his prediction turns out reasonably well (approximately a 50-50 proposition), it is offered as proof positive as to the power of his computer. If, however, his prediction turns out to be wide of the mark (again a 50-50 proposition), no explanation is offered or we are presented with a series of cute excuses essentially saying that a computer cannot predict the future.

The more sophisticated reader realizes that the line makers are fully aware of the pap that Goode's computer generates and have incorporated that data along with many other factors to arrive at a point spread. This tilts the probable outcome away from what Goode's computer predicts, as evidenced by the 45% record he has

shown over the past two years while predicting for *The Post*.

His laughable season prognostication in *Sports Illustrated* two years ago only serves to highlight the foolishness of this type of analysis.

The sophisticated bettor knows that the way to make money is not to bet along with Bud Goode's computer, but rather to bet exactly opposite.

Stanley Kaplan

New York, N.Y.

Lost Goode Shirt

After many years of selling computers I bet my career and steady income and created Computer Professionals (a recruiting/search firm). Now I bet that there will always be talented people in the data processing industry and I bet there will always be challenging jobs out there for them.

On Jan. 19, I arrived at my very sports-minded and very betting-minded friend's home for a Super Bowl party. Being Mr. DP in the group, I announced that due to some very reliable statistical information privy especially to CW readers, all my money would be on the Eagles. Just to reinforce my envied position, I made an additional side bet in the last five minutes of the game.

Rather than continue this sad scenario, I would have Bud Goode mail one white, 15-1/2-33 Arrow shirt to my company headquarters. Please ask him to hurry because the wind/chill has been around -12°.

Kevin B. Hogan

Palatine, Ill.

Clearing Up RMF Issue

Maybe this will clarify some of the confusion concerning RMF measurement [CW, Jan. 19, Feb. 2]. There are a number of sources of information available from IBM which explain the capabilities, limitations, quirks and exclusions of SMF, RMF and MF/1 measurement tools. A reading of the SMF manual for the appropriate operating system is a prerequisite for using SMF data for capacity-planning purposes, either SMF alone or with record types 70 and above supplied to SMF by RMF or MF/1.

The notion of capture ratios to adjust SMF/RMF measurements for accuracy was first proposed by IBM Canada's Central Region Field Support Centre as a part of its early studies in OS capacity planning techniques. The Centre's methodology developed in the 1975-76 timeframe was picked up by the U.S. IBM Data Processing Division as a marketing support program in 1977 and renamed Usage (Understanding Your System and Application Growth Environment).

Hundreds of IBM OS customers were assisted in performing Usage studies, and later the methodology was extended to support DOS implementation using DOS accounting data in lieu of SMF. A thorough understanding of when and how the measurements are taken (and what system functions are excluded) is essential to the accuracy of the current work load analysis.

The capture ratios provided by IBM for Usage customers are a fairly accurate starting point, but can be refined

empirically to reflect on individual installation's variations in OS options and operating conventions. It must be done by adjusting the capture ratios (which vary by application type and package) for all segments of the work load until the aggregate adjusted CPU time equals total true CPU time (wall clock time minus down time minus wait time).

Utilizing the IBM-supplied capture ratios directly for the appropriate operating system and version will normally yield accuracy to within 10%, but can be improved upon significantly by the iterative procedure just described.

IBM even has two programs available to assist in the effort, Service Level Reporter (SLR) and Capacity Planning Extended (CPX), for OS/VS systems.

It is important that the current work load analysis be as accurate as possible in order to provide an adequate base upon which to perform the second half of a capacity planning study — the forecast.

Incidentally, a hardware monitor can be helpful but is not by any means essential to an accurate analysis. What is essential is that *all* components of the work load be considered in order to effect an accurate computation of the various capture ratios for the system being studied.

Going back to the original article, the reason that a discrepancy of 5.1% was still apparent after application of the TSO capture ratio is, there are several capture ratios for TSO workloads, depending upon the type of work (program or data entry, debugging, SPF, scientific or financial applications). The TSO work load must be broken down into its components and the appropriate capture ratio applied. IMS work loads must also be split up by transaction complexity for an accurate analysis. It is also true that the various components of TSO and IMS will grow at different rates, so the split-out is necessary anyway for an accurate forecast.

My firm utilizes an expanded and extended version of the Usage methodology for our clients with much success, and doubtless there are other consulting firms which have developed similar methodologies. The capture ratios and associated rules of thumb are not magic, nor are they unknown to, or covered up by, IBM. The major advantage of the methodology is that its results provide accuracy well within acceptable limits and are easily understood by top management.

Frances Smith Abernathy
Rockville, Md.

Need It? You'll Afford It

Regarding "Maybe You Don't Need a Computer" [CW, Jan. 19], I have just a few simple questions:

1. Do I want it?
2. Do I need it?
3. Can I afford it?

If the answer to all three questions is yes, then go ahead and buy.

If the answer to question No. 1 is no, you won't anyway.

If the answer to both questions No. 1 and No. 2 is yes and No. 3 is no, then you mislead yourself in answering question No. 2.

If you absolutely need the system there ought to be no circumstances under which you cannot afford it.

These considerations apply from vacuum cleaners to computers.

W.J. Talbot
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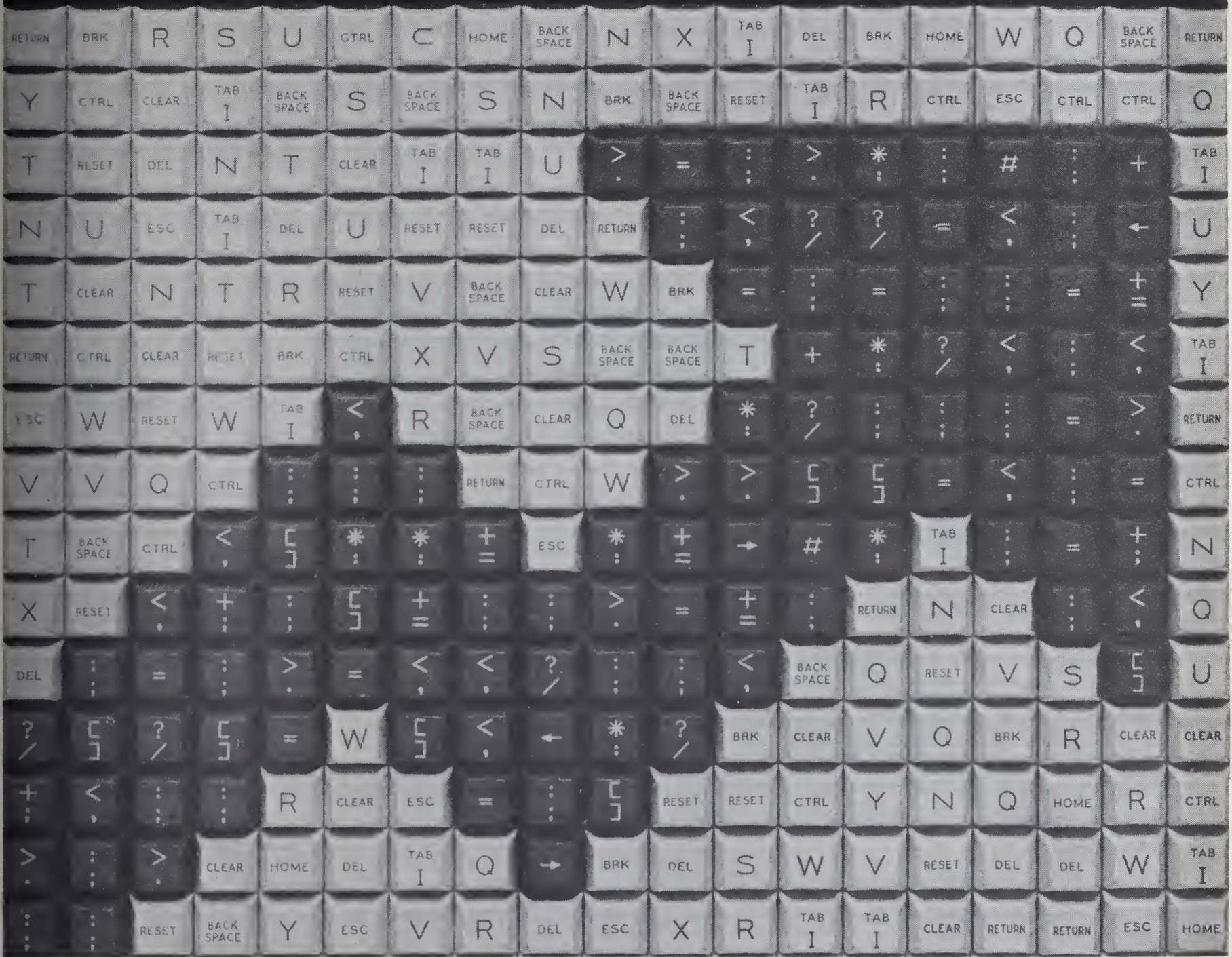
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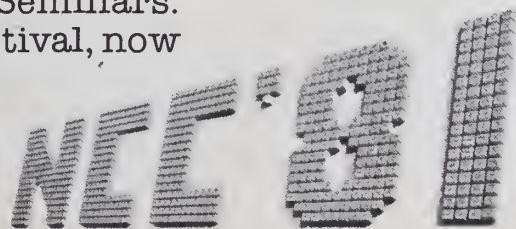
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Management Role May Make You Miserable

(Continued from Page 37)

tion of each color and what its emphasis is within each personality style.

Red represents the aggressive, direct, task- and production-oriented personality. This individual is down-to-earth, impatient to get results, self-sufficient and outward-directed.

Yellow represents an outward-directed, group-minded, socially oriented person as opposed to one guided solely by self-interest. This type loves discussion arguments.

Green represents a "by-the-system," impersonal, organization-oriented person. Typically inward-directed, he likes to use the power of his title and set guidelines to get results.

Blue represents the person who prefers to get results with innovation. He

is more a thinker than a doer and likes change, challenge, mental activities, planning and analysis. Typically this individual is inward-directed, individualistic and idealistic.

Modus Operandi

As a simple example of these colors, let's say that we have four individuals whose predominant colors are, respectively, blue, red, yellow and green. The problem is as follows: The four are in the same room with three cats and the problem is to get the cats out of the room as efficiently as possible.

The "blue" personality would sit and analyze the problem. Finally, he might suggest cutting three holes in the door so that each cat would have its own way out. The cats would be labeled

"A," "B" and "C" and the holes "A," "B" and "C."

The "red" person would simply cut the three holes, gather the cats and throw them out. Task done.

The "yellow" person would say, "Here, kitty, kitty," trying to gently coax each one out its individual hole — the motivation approach.

The "green" person would accept the system of labeling each cat and each hole and then "force" each cat to go through its hole. In other words, he would go by the system and enforce the rules.

But what does all this mean to the data processing industry? We believe the effect of the job and the individual personalities are the basis for many of the ills of the industry.

We have compiled color codes for several job functions within the profession and have represented them in order of intensity, in the OK personality style, for each job function.

While it is true that people can perform work in the parent or stress style, if the basic interest needs are not met, an individual may react to the job in several ways, none of which will be good for that individual or the employer.

Following are the DP job functions as color-coded:

Programmer: green, red, blue, yellow.

Programmer/analyst: blue, green, red, yellow.

Systems analyst: yellow, blue, red, green.

Project leader: yellow, red, blue, green.

DP manager: red, yellow, blue, green.

Director: red, blue, yellow, green.

The first two colors denote primary color combinations within the OK personality style. In some cases, these two colors may be interchanged, as intensity levels are usually similar until management. At that point, the last three color codes are similar in intensity, but the primary color, red, is predominant. These job function codes illustrate graphically the broad differences between management and technical personalities. They in no way denote capability or intelligence, only interest intensity.

The discrepancy between job and individual personality does not rear its ugly head until the DPer moves from inward-directed job functions to the outward-directed. In the case of our young woman, a yellow-blue-red-green personality, it started immediately. She was, so to speak, a square peg being forced into a round hole.

Is her case unusual? Not in the least. According to information we have gathered, the overall job market contains approximately 65% personality misfits. People are performing jobs in which they have no interest. Our files have applicants that have a new job every year. There are 30-year-olds with heart ailments, divorces, drinking problems, and so on.

The picture is not pretty, and we believe it will get worse because it all starts at home and at school. Johnnie is a bright child with an IQ well above average, likes to work with his hands and tools, is independent, likes to stay by himself and shows creativity. His parents and teacher are proud of him. Someone says, "Johnnie, you need to make something of yourself. Why don't you become an engineer?"

Poor Johnnie was thinking of being a mechanic, but this ideal is quickly put down in the interest of "really making something of himself."

He gets through school with good grades because he is smart enough. He goes to work, gets married, has children, gets promotions and makes more money. He begins to hate his job, but he is trapped.

Nineteen years go by, and one day, for no apparent reason, he has a nervous breakdown. Fiction? No. Happens every day.

Armstrong is president of Ron Armstrong & Associates, personnel consultants based in Houston.

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The Basic Sessions deal with everything from the need for word processing to cost justification through getting underway, implementing, office communications and management and control for day-to-day operation.

Basic Sessions on the first day will be chaired by Willoughby Ann Walsche, executive editor, *Word Processing Systems* magazine and *Word Processing Report* newsletter. The second day chair of the Basic Sessions is Jerrold J. Eisen, president of Offices Sciences International Inc., a subsidiary of Communications Sciences Inc.

Advanced Sessions stress integration

The Advanced Sessions begin with comprehensive work on office automation concepts through problems and solutions and a double session on achieving full integration. There'll be guidance sessions on applications planning, word processing interface options and even electronic mail.

Norman M. Martin, chair of the first day Advanced Sessions is president of his own consulting firm and has 25 years experience with word/information/data processing equipment and systems as well as digital data communications. Robert Greenblatt, president of National Word Processing, Inc., a firm specializing in the design and implementation of administrative programs to integrate data processing and word processing, is chair of the second day Advanced Sessions.

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Session speakers for ISC '81 are: Gerald S. Maskovsky, director of the Office of the Future, consulting in the management consulting service unit of Coopers & Lybrand; Stevan Silva, manager, interactive service division of Management Information Services with the Commercial Union Insurance Company; Sylvia M. Courtney, office automation manager with the Commercial Union Insurance Company; Peter F. Polizzano, vice president, marketing programs for CompuScan, Inc.; Eugene Starr, director of corporate development for ONTEL Corp.; Herbert Lovit, founder and chairman of the board of Communication Sciences, Inc.; Joseph Ramellini, director, advanced office support systems with CBS, Inc.; Patricia Rieno, manager, administrative support service with Olin Corp.; Angelo Cappello, office services manager, PepsiCo, Inc. and Herb Fried, systems officer, Citibank of New York.

REGISTER TODAY: The Invitational Systems Conference on Word Processing and Data Processing produced by CW Conference Management will be held at the Rye Town Hilton in Westchester County, New York. The conference fee is \$295 per person and covers two days of sessions and two luncheons. For more information or to register call Louise Myerow, Registration Coordinator, on our toll-free number: 1-800-225-4698, ext. 435. In Massachusetts call (617) 879-0700, ext. 435.

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HUMAN CONNECTION/Jack Stone

Computer Center Stands Out as Success

It has been nearly four years since I issued my original appeal for a computing center whose director would be willing to stand up and identify the center as a "success" ["Where Are the Operations Success Stories?," CW, Aug. 22, 1977].

Well, I finally found one: the computer center at Catholic University of America (CUA) in Washington, D.C.

Let me provide some background. At the time of the article, I was submerged in a flood of complaints from users about their computer operations (and from the computer center personnel about their users). So I had an idea about finding a center that radiated success and interviewing many of the key people in the operation — including users and top executives — to see if I could document the reasons why it did.

Nobody Came Forward

But I was too idealistic and the idea failed because I couldn't locate a center director willing to make the claim and let me validate same through my interviews. Hence, I used the article to challenge the august members of this stalwart industry to come forward. My plea included these thoughts on the human connection:

"...It may never make the textbooks, but I'll propose the 'Stone Theorem on Data Processing Management' anyway. It states: 'In general, the technical performance goals of the information systems function are achievable only when human performance goals are developed in humanistic terms and resources are applied toward their attainment.' I submit that my difficulty in finding a successful center strongly suggests the validity of my Theorem — because of the well-known DPer disinterest in humanistic values — but does not constitute irrefutable proof."

Well, I may have a notion or two on how important human values are in making a center's operation successful, but CUA's computer center management team is an undisputed authority on the matter, and the application of this knowledge was certainly a major factor in CUA's success. The team is ably led by director Karl Thomas and includes Stephen Roberts, administrative systems; Bob Lombardo, operations; Ardoth Hassler, academic services; and Ed Mulrean, systems programming.

The operation is so impressive that my writings about it have evolved into a book-length monograph, to be published soon. Nevertheless, I want to use the remainder of this article to make a few general comments about the center.

First, let there be no doubt about the general applicability of CUA's (or other universities') experience to commercial and government computing centers. Like other large-scale installations, CUA faces extremely complex administration systems requirements, such as extensive and changing payrolls (annual contracts for many faculty members); comprehensive financial accounting (complicated by its nonprofit status); peak-load customer demand (student registration); and

large volume and detailed accounts receivable (student billing). In addition, CUA must serve a vast population of individual, highly sophisticated small users with widely ranging computational requirements (academic researchers) and maintain an ongoing training and support program for hundreds of new users each year (undergrads). Next, the subject of human communications at the CUA center. The best — and simplest — way of characterizing them is to say that the communications are open, everywhere. Then comes the question of how "success" is defined. I don't know the

complete answer yet, but I know this much: If your chief executive makes a statement similar to the one that the university's president, Dr. Edmund Pellegrino, made to me, then you're on the right track. He said, "I've been in senior executive positions in a number of academic institutions.

"In the others, I had to deal continually with serious complaints from the faculty about our computer operations. I always felt that I was spending a lot of unnecessary time trying to resolve these issues.

"But at CUA? Here there is zero noise. Instead, I hear encomiums. Karl and his people are doing a superb job."

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Basic Taking on New Dimensions

(Continued from Page 37)

ther extensions of the Level II language, providing a maximum of upward compatibility from the Model I systems.

The Model II capability adds more than a dozen new commands and is an ongoing, supported system since it is RAM- and not ROM-based.

The main difference in the progression of Basic capability reflected for the TRS-80 family of computers is in the increasing complexity of the environment and, hence, the system. The language extends in order to encompass these enhancements.

Other Improved Versions

But the large market of the TRS-80 has invited competition from indepen-

dent sources who bring improved Basics to that line. Thus, for example, one supplier provides a compiler version with the additional attributes of faster execution speeds and optimized and relocatable object code, but at the expense of not being interactive in the program development phase.

Another side benefit from the compiler version is the ability to distribute object code rather than source programs and thereby afford more proprietary protection.

Typical criticism of Basic has been its slow operation as an interpretive system, the paucity of business-oriented data processing language capability, its lack of file handling and poor string manipulation, absence of a screen orientation and, strangely enough, the

ease with which the source code can be understood, which invites loss of code protection. But there are good responses to all of these points with the more complex versions of Basic coming to the marketplace.

There seems to be no end to the increasing power of Basic. For example, a new advanced Basic has arrived on the scene and boasts:

(a) Six data types.

(b) Local and global variables, functions and procedures.

(c) Complete compiler, relocatable code and automatic linking to libraries.

(d) Enhanced language statements supportive of nestable, structured programming.

(e) Recursively used functions and procedures.

(f) Dynamic inclusion of files and library source modules at compile time.

(g) Formatted printing.

(h) Sequential and random files.

(i) Efficient execution capability.

(j) Debugging and documentation aids.

Basic compiler building has become a big business. One vendor, Microsoft, boasts the use of its Basic on more than 300,000 microcomputers, performing in a host of operating system environments.

The popularity and ubiquity of Basic is reflected not only in the large number of executable programs, but also in the vast amount of literature. Titles such as *My Computer Likes Me When I Speak in Basic and Computer Programming for the Complete Idiot* are just one reflection of the impact of this language.

Basic has been popularized through catalogs such as *The Basic Cookbook* by Ken Tractor and *The Basic Handbook* by David Lien. Lien's book is further described as an encyclopedia of the Basic language covering 250 variations of statements, functions, operations and commands found in hundreds of dialects or versions of Basic existing today.

Serious texts such as *Problem Solving and Structured Programming in Basic* by Koffman and Friedman and *Foundations of Programming Through Basic* by Moulton are also available.

But most significant, the Basic source language has become the de facto standard for program publishing and exchange in the personal computer marketplace.

It is possible to get lost in the alphabet soup of various Basic implementations. We note the proliferation of everyman's Basic as reflected in such offerings as Basic-80, S-Basic, extended Basic, Business Basic, Basic-Plus, minimal Basic, Ubasic, Mbasic, Cbasic, Power Basic, Tiny Basic, Infinite Basic and on and on . . .

Frank is executive vice-president of Informatics, Inc., Woodland Hills, Calif.

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Unrealistic Attitude Common Flexibility Key to Structured Workshops

By Robert Powell
Special to CW

NEW YORK — Technicians who attend the various structured analysis and design workshops often enter the classroom with an unrealistic attitude. They expect much more than they can ever hope to obtain.

It should be understood that these courses offer tools rather than methodologies. At the end of a week, the instructor doesn't pour out a magic formula that enables the student to write structured programming or design manuals. It doesn't work that way. It can't.

The key to benefiting from any workshop on structured concepts is flexibility. Since all DP shops use different strategies and techniques, some shops will need more time and effort to implement the structured methods, while others will experience a minimum amount of difficulty.

As the tools and techniques are presented, the student must gauge the best implementation technique for his specific environment. For example, Canada Dry Corp. (CD) replaced system flows with data flow diagrams. However, the numbering scheme used is completely different from the one of-

fered in the Yourdon, Inc. workshop attended by CD technicians. The systems analysts simply felt more comfortable with the in-house scheme. By no means should this modification be considered a rejection of the course materials. They are intended to be implemented in just this way.

Piecemeal Basis

Our experience at CD also indicated that these tools should be worked into the environment on a piece-by-piece basis. A complete overhaul in one shot can prove disastrous. A DP director does not walk in one Monday morning and declare the department structured. A gradual approach is essential because:

- Many of the traditional standards and techniques currently being used will probably remain in force. The slow introduction of structured concepts will allow you to evaluate what can and can't be used in your specific environment.

- Personnel are more likely to accept gradual change. By introducing structured techniques progressively, the benefits can be perceived as evolutionary rather than revo-

lutionary.

Attendance at formal workshops is strongly recommended for any DP shop that is seriously considering the use of structured programming, design and analysis techniques. After completing the workshop, an evaluation should be performed to decide which tools will work for you.

You may decide that structured program-

Thinking about implementing structured programming, design and/or analysis techniques at your installation? Powell and Canada Dry Corp. here have already been through it. The system designer has some suggestions for making the best use of the structured workshops that have proliferated along with the techniques.

ming and design will improve your shop's productivity while structured analysis would have a negative effect. It is even possible that workshop attendance will lead to the conclusion that structured methodologies offer no significant benefits in your environment.

While it appears that "structured" would still be only a buzzword to CD without the help available in formal workshops, it was up to the attendees to make the appropriate choices and best use of the workshop offerings.

Powell is a system designer with Canada Dry Corp.

Fortran Standard to Include Recursive Feature Proposal

WASHINGTON, D.C. — A proposal for recursive features will be included in the new Fortran standard being developed by the American National Standards Institute's (Ansi) X3J3 committee.

The proposal draft, which was adopted at X3J3's October 1980 meeting, provides that a Fortran procedure may call itself, either directly or indirectly, with the restriction that its heading statement declares the procedure to be a recursive subroutine or function.

When the recursive procedure was studied in detail at a January 1981 meeting, however, some semantic difficulties were pointed out by X3J3 members, according to a report in the *Fortran Newsletter*.

Fortran Semantics

Until now, the Fortran standard has avoided defining the precise semantics of COMMON, DATA and SAVE features, an X3J3 participant noted. Including recursion in the standard makes a more complete specification of these features necessary, he said.

For example, the committee must decide whether items described in a DATA statement are to be initialized each time a recursive procedure is executed or just once in a global fashion.

Another question to be resolved is whether

a recursive procedure can include a variable that counts the number of times it has been entered at the current level.

X3J3 has plenty of time to consider these and other questions since the target date for completion of Ansi action on the future Fortran standard is set for 1985, according to the report.

Routine Handles Time Conversion

GRANADA HILLS, Calif. — A time conversion routine designed for use with system management function records for OS/VS/ MVS operating systems has been announced by Dylakor Software Systems, Inc.

DYLSMFTC is said to save the systems programmer from having to convert time expressed in hundredths of seconds to hours, minutes and seconds for reporting purposes.

The routine is called from Dylakor's report writer/utility, DYI-260, but it can be called from a variety of other programs as well.

The subroutine carries a one-time charge of \$225 from the vendor at 17418 Chatsworth St., Granada Hills, Calif. 91344.

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"Systems and utilities" software is a vague, all-encompassing term that includes report writers, sorts, library management and EDP audit function among many others. Every information systems professional works with systems and utilities packages on a daily basis and *Computerworld* wants to hear what you think of them for a special report.

Let us hear about how you put system and utility software to work by March 27. Send a typed, double-spaced manuscript no longer than five or six pages to Rita Shoor, Senior Editor/Software & Services, *Computerworld*, Box 880, Framingham, Mass. 01701.

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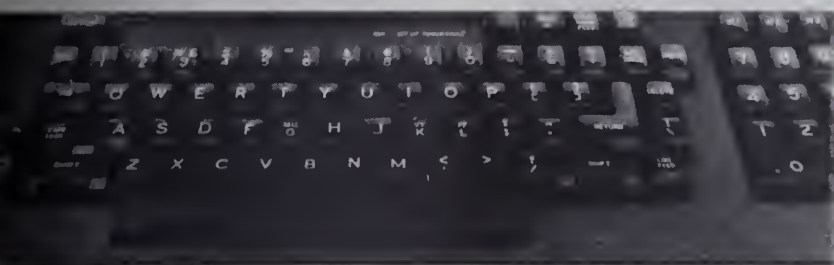


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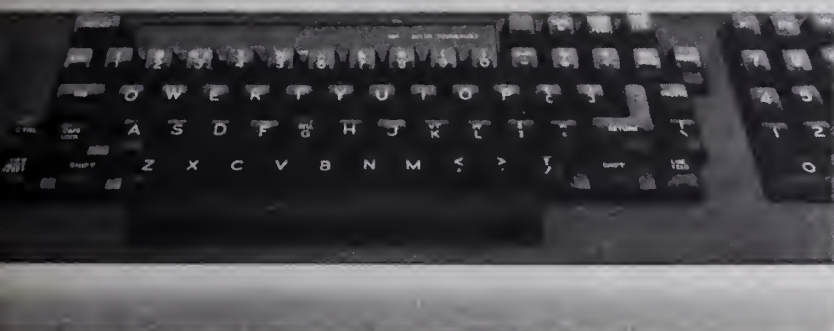
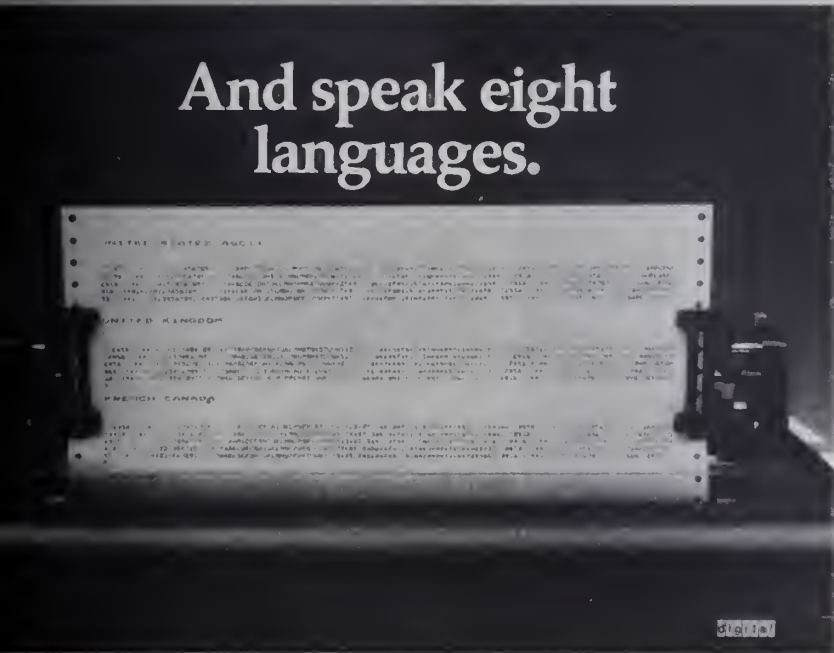


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Astute Meeting Starts March 23

AUSTIN, Texas — The annual conference of the Association of (Intel Corp.) System 2000 Users for Technical Exchange (Astute) will be held at the Sheraton-Crest Inn here March 23-25.

"DBMS State-of-the-Art and the End User" will be keynoted by Dr. Mary E. S. Loomis, professor of management information systems at the University of Arizona in Tucson, Ariz.

The conference will also include papers and seminars on data base management.

Registration costs \$100. More information is available from Astute Secretary Roger Katz, Gibbs and Hill, Inc., 393 Seventh Ave., New York, N.Y. 10001.

MSA Updates Accounting To Comply With FASB 33

ATLANTA — Management Science America, Inc. (MSA) has updated its Fixed Assets Accounting System to provide automatic compliance with the inflation disclosure requirements of the Financial Accounting Standards Board Statement 33 (FASB 33).

The new release supports current cost accounting, as well as constant dollar accounting. According to MSA, the user may now retire multiple assets with a single transaction through the mass-retirement feature. An asset-reversal feature provides for the automatic reinstatement of retired assets to reflect the status of the asset prior to retirement.

Release 6.0 of the MSA Fixed Asset

Accounting System includes an enhanced interface with the MSA General Ledger system which enables users to interface projected depreciation to its Budget Module.

In addition to maintaining information on the location and description of property, the system processes and maintains data for asset depreciation.

Release 6.0 is currently available for IBM 360, 370, 30 series, 4300 and IBM plug-compatible systems for both OS and DOS operating systems. Both Isam and Vsam versions are available. The price ranges from \$27,000 to \$42,000.

The vendor is located at 3445 Peachtree Road, N.E., Atlanta, Ga. 30326.

'Prism' Assists Data Base Work

PRINCETON, N.J. — A process and software product designed to assist corporations in building better data base systems has been announced by Performance Development Corp. and Synergetics Corp.

As a process, Prism organizes and guides the tasks of strategic data base design.

As a software product, it maintains a cross-referenced dictionary for the process, the vendors said.

It is also a data base design tool which adopts a fully on-line dictionary approach and offers a relational generator, the vendor claimed.

Prism will be available in mid-April and will cost about \$15,000 for the basic system with options available from Performance Development Corp., 1101 State Road, Princeton, N.J. 08540.

Report Profiles Credit Ratings

ORANGE, Calif. — Information Services Division of TRW, Inc. has announced a computerized business information report reportedly designed to assist executives in making faster credit decisions with its four computer-generated credit evaluation tools.

The four tools of Business Profile include a profile of how a company pays each of its suppliers compared to an industry average, a summary of how a company pays a specific industry group, a quarter-by-quarter analysis of payment habits and a three-character payment guide that reflects a company's overall payment performance, the vendor claimed.

The TRW Business Profile costs between \$6 and \$7, plus \$2 additional for an optional Standard and Poors data package of accounting ratios, from Information Services Division of TRW, Inc., 505 City Parkway W., Orange, Calif. 92668.

Graphics Module Joins 'FCS-EPS'

CHICAGO — EPS, Inc. is offering an Interactive Financial Graphics Module for FCS-EPS, the firm's end-user-oriented financial planning, analysis and decision support system.

According to the vendor, the module enables business planners to turn any statistical or operational model information into computer graphic output. The system includes functions to do line plots, vertical and horizontal bar graphs, bubble plots and pie charts.

The module interfaces with the Tektronix, Inc. 4014 color terminal, Hewlett-Packard Co. 7221B and Houston Instruments, Inc. Hiplot flat-bed plotters.

Other devices will be supported upon user request, the vendor spokesman said.

The Interactive Financial Graphics Module for the FCS-EPS system costs \$8,000. The FCS-EPS system costs \$35,000 to \$50,000, depending on modules selected, the vendor said from 8600 Bryn Mawr Ave., Chicago, Ill. 60631.

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'O-W-L' Backs Vsam, Gains Security Upgrades

ATLANTA — Quanex Corp. has announced a new release of its O-W-L On-line Program Development System that reportedly features Vsam support and productivity and security enhancements.

Version 6 of the package also includes an optional Conversational Procedure Language. Security is provided through "user profiles" and productivity improvement is said to be possible through "command stacking."

The system runs in DOS/VS(E), OS/VS1 and OS/MVS environments. Prices range from \$13,800 to \$24,700 from the firm at 3720 Longview Drive, Atlanta, Ga. 30341.

CICS Subsystem Handles Project Planning Data

PHILADELPHIA — An on-line subsystem that allows users to enter and maintain

project planning data in a conversational and interactive manner has been announced by Atlantic Software, Inc.

Ansi Offers 1981 Catalog

NEW YORK — The American National Standards Institute (Ansi) has announced its 1981 catalog of American National Standards.

The catalog provides more than 10,000 current standards approved by the institute.

The 206-page publication costs \$8.50, the organization said from 1430 Broadway, New York, N.Y. 10018.

The PC/70 Project Planning and Control on-line CICS subsystem features include page mode technology, prompting and validation of data, security, complete data recovery in the event of hardware failure and "what if" planning which does not affect the status of active projects.

A permanent license for the CICS on-line subsystem costs \$25,000, the vendor said from 320 Walnut St., Philadelphia, Pa. 19106.

And Socio-Economic Models Lehigh Announces 'DSS/2' Update

BETHLEHEM, Pa. — Lehigh University's Department of Chemical Engineering has announced a new release of Differential Systems Simulator, Version 2 (DSS/2) and a series of socio-economic technological models.

The new release of DSS/2, a Fortran IV computer code for the numerical integration of ordinary and partial differential equations (ODE/PDE), includes a selection of 14 explicit temporal integrators for ODEs, all with automatic error monitoring and control.

The algorithms range from second- to fifth-order, with one-, two- and three-term error estimators.

Implicit Integrators

It also includes four implicit temporal integrators for "stiff" ODE systems with widely separated eigenvalues and a selection of five user-callable subroutines for three-, five-, seven-, nine- and 11-point approximations of spatial derivatives in one-dimensional PDEs.

Package Allows Boiler Plates; Ties WP, DP

NEW YORK — A software package that links word processing and data processing and allows users to assemble boiler-plate documents with variable insertions is available from Computron Software.

Boiler can be used to create documents that may be boiler-plate letters or lengthier documents assembled from groups of paragraphs, the vendor said.

The system reportedly has applications in government agencies, law firms, insurance companies, leasing companies, banks and marketing organizations.

Boiler is priced at \$5,000 and is available from Computron Software, 810 Seventh Ave. New York, N.Y. 10019.

'Faads' Processes Multifirm Setup

ENGLEWOOD, Colo. — A software package that reportedly can process a multicompany environment and allows for multiple depreciation methods is available from Computer Resources Corp.

Fixed Asset Accounting and Depreciation System (Faads) allows for corporate and tax books and provides audit trails and varied/multiple reports, including ad hoc reports, the vendor claimed.

Faads is available immediately and is priced at \$4,995 from Computer Resources Corp., Suite 118, 5680 S. Syracuse, Englewood, Colo. 80111.

According to the vendor, DSS/2 has broad application in science, engineering and economics because of the basic algorithm of the system and the versatile numerical method of lines. DSS/2 runs on most major computer systems.

The Educational Computer-Based Models for Socio-Economic-Technological Situations (Ecomsets) are self-contained Fortran IV programs written in the DSS/2 format. The entire set of 25 models is available on 9-track

tape with either 800- or 1,600 bit/in.

The Ecomsets include Introductory World Energy, Demand for Oxygen in Rivers, Effects of an Oil Spill on Marine Life, the Logistic Equation and Fundamental Growth Laws.

DSS/2 with supporting documentation is available for a 30-day trial period. The one-time purchase price is \$1,000. The 25 Ecomsets cost \$100, the vendor said from Whitaker No. 5, Lehigh University, Bethlehem, Pa. 18015.

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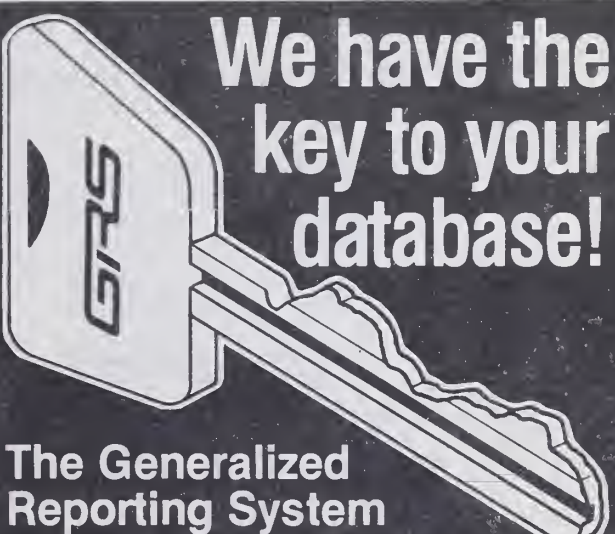
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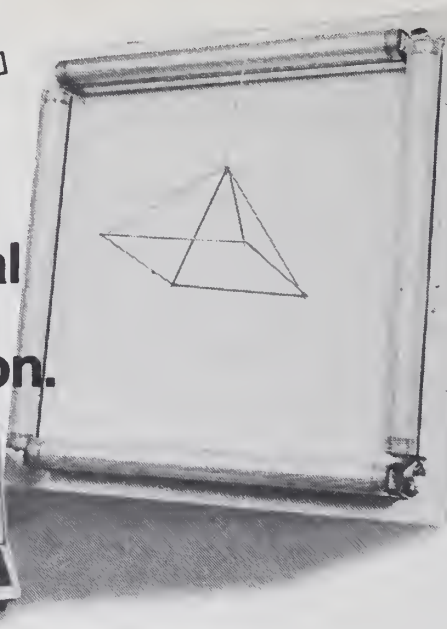
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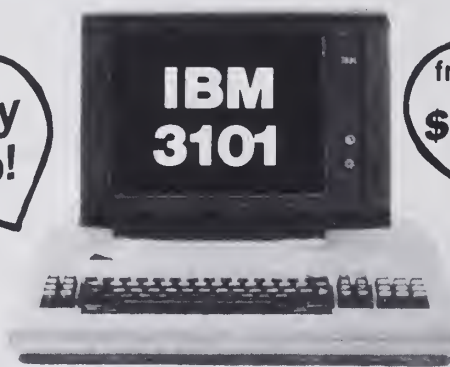
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Financial Accounting Tools Geared to TI DS990s

MINNEAPOLIS — A set of financial accounting software products for Texas Instruments, Inc. DS990 Model 1, 2 and 4 computers has been developed by Open Systems, Inc.

Written in RM/Cobol, the Software Fitness Program runs under the COS990 operating system and is designed for small and medium-sized business users.

It includes sales order processing, accounts receivable with billing and sales analysis, accounts payable, general ledger, inventory, payroll and job cost applications.

Applications Environment

The applications will run in a single-user environment on the diskette-based TI DS990/1 and a multiuser environment on the TI DS990/2, using either diskette or disk.

It also can be upgraded to the TI DS990/4 and higher configurations, the vendor said.

Its features include open item and balance forward accounting, Lifo, Fifo and average cost methods of inventory valuation, financial statement report

generator, revenue and expense accounting by job or phase and on-line interactivity between all applications.

There is a one-time license fee of \$750 per application, which includes user guides, disk or diskettes, a software reference manual, a forms kit and the source code.

All seven of the Software Fitness Program applications will be available by April.

Open Systems, Inc. is headquartered at Suite 409, 430 Oak Grove, Minneapolis, Minn. 55403.

Accusoft Introduces WP for System/34

SAN FRANCISCO — Accusoft, Inc. is offering a word processing package for IBM System/34 users.

Called Zword/34, the package features phrase insert facilities, columnar shift and automatic footnote tie-in, the vendor said.

The package costs \$3,000 with an annual \$250 maintenance fee, the vendor said from Suite 2230, One California St., San Francisco, Calif. 94111.

CPAs Get 'Client Write-Up' To Fit MCBA Packages

ATLANTA — Atlanta Business Computer Group, Inc. has developed a Client Write-Up module for the CPA professional to use with MCBA, Inc.'s general ledger software for Texas Instruments, Inc. machines.

The vendor said this transaction processing tool will enable users to speed up system throughput and improve transaction documentation.

The module offers users the ability to predefine the input screen for any type of transaction that will be encountered, the vendor said.

Users reportedly can employ an un-

limited number of source journals and the type of data in any source journal can be mixed. Facilities are provided for user definition of payroll data for up to 50 states.

The system also will generate earnings reports for any period of time, quarterly payroll tax reports for any quarter at any time after data has been processed and W-2 forms as desired.

The single-CPU price for the Client Write-Up Module is \$2,000, according to the vendor at Suite 315, 2060 Peachtree Industrial Court, Chamblee, Ga. 30341.

Tominy's 'Data Base-Plus' Gains Remote CRT, Printer Support

CINCINNATI — Tominy, Inc. has announced the availability of remote CRT and printer support for its Data Base-Plus system on IBM Series/1 under the control of a front-end processor.

The host Data Base-Plus system communicates with the front end across bisynchronous communications facilities (dial-up or leased) using standard point-to-point protocol. The front end governs all direct communications with the devices, which may be remote or local.

According to the vendor, the front-end processor serves as a line concentrator, provides greater line speed capacity up to 19.2K bytes and offloads the teleprocessing and device dependency processing from the host.

The remote support facility carries a one-time fee of \$5,000, with maintenance at \$1,500 per year.

The cost of the front-end processor varies depending upon the hardware configuration, the vendor said from 4152 Crossgate Drive, Cincinnati, Ohio 45236.

Datamatics Offers Programs For RPG-II File Maintenance

LITTLE ROCK, Ark. — Datamatics Services, Inc. is offering a series of programs that create a set of batch-oriented RPG-II file maintenance programs for a given file.

The package features a free-format key-in for file maintenance transactions. The package is written in RPG-

II and has been used on IBM's System/34, System/32 and System/3 as well as 360 and 370 processors.

The package costs \$2,500 including source programs, documentation and training, the vendor said from 6423 Scott Hamilton Drive, Little Rock, Ark. 72214.

Word Processing Package Designed for IBM 5100

LAKEWOOD, Colo. — A word processing package for the IBM 5100 series has been developed by Creative Applications, Inc.

The word processing system includes left and right justification and global margin override; centered text and automatic page numbering; uppercase/lowercase underscore; high-quality printer interface; local and global find and replace; document and paragraph duplication; input tab control; full screen and line edit capability; and readability analysis.

A floating pagination scheme enables a document to be altered at print time without modifying the actual text. Using a scan algorithm unique to the 5100 microprocessor, the system can search paragraphs of text for selected phrases at the rate of 1,500 char./sec.

T/S System Gives Analyses For Construction

NEW YORK — A time-shared system that analyzes construction activity, economic conditions and demographics at different levels of geographic detail has been introduced jointly by F.W. Dodge Division of McGraw-Hill Information System Co. here and Data Resources, Inc. of Lexington, Mass.

The Dodge/DRI Construction Analysis System permits on-line integration of company statistics with applicable construction, economic and demographic data for every county in the U.S., with complete analytical software access. The software produces standardized reports, customized territorial evaluation reports and the means to conduct advanced correlation and regression analyses.

On-line access to Dodge Construction Potentials (DCP) and DRI Regional/County Economic and Demographic Data is provided. Data can be analyzed and displayed on graphs ranging from simple plots to multicolor, three-dimensional maps. Detailed statistical computer tapes are provided by Dodge.

The system is offered on an annual subscription basis, with typical costs ranging from \$3,000 to \$33,000, depending on state coverage and any previously paid software access charges. The price includes the cost of Dodge's tapes.

Dodge is located at 1221 Ave. of the Americas, New York, N.Y. 10020. Data Resources' offices are at 29 Hartwell Ave., Lexington, Mass. 02173.

The system requires an IBM 5110 or 5120, with APL language support, 64K memory and two diskette drives. It outputs data to the IBM 5103 printer or, optionally, to any Ascii compatible printer via the 5100 Serial I/O interface.

Word Processing retails for \$2,000 and is available from the vendor at Suite 206, 2525 S. Wadsworth Blvd., Lakewood, Colo. 80227.

Audit, Data Base Courses Offered

ST. PAUL, Minn. — "Data Base Concepts for Auditors" and "Audit and Control in the Data Base Environment" are two new programs scheduled for presentation by RHY Consultants, Inc. in four locations this spring.

"Data Base Concepts" will be held in Philadelphia, March 9-10; Los Angeles, April 6-7; Washington, D.C. May 4-5; and in St. Louis June 8-9. This course introduces auditors to the basic principles of data

base.

"Audit and Control" in the "Data Base Environment" is being conducted in the same cities as mentioned above on the two days following the "Data Base Concepts" program. This course emphasizes specialized ways of recognizing, preventing and overcoming the various audit and control problems inherent in data base technology.

The audit approach is based on work in progress being

done jointly by Data Base Research Project of the American Institute of CPA's, The Canadian Institute of Chartered Accountants and the Institute of Internal Auditors.

The programs can be taken individually for \$345 and \$495, respectively, or combined for \$725. More information is available from Stephanie Gaubatz, program manager at RHY Consultants, 1444 Balsom St., St. Paul, Minn. 55122.

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Blis/Cobol Meet Set for March

ORLANDO, Fla. — The Third Annual Blis/Cobol Users Group Meeting will be held here March 15-18. This year's event includes technical and marketing sessions encompassing programming techniques, new hardware technology, software applications.

The Blis/Cobol operating system, a product of Information Processing, Inc., is reportedly installed in more than 900 locations worldwide.

More details on the user meeting and concurrent exhibit are available from Shawn Eady, 1981 Meeting Coordinator, Blis/Cobol User Group, Suite 203, 5104 N. Orange Blossom Terr., Orlando, Fla. 32804.

Financial Modeling System Runs on Prime Machines

SEATTLE — A financial modeling and analysis system for all Prime Computer, Inc. systems allows interactive on-line planning and analysis, according to its vendor, Minicomputer Modeling, Inc. (MMI).

Data*Model was designed to run large, complex models with minimal system impact, the vendor said.

Automatic spreadsheets may have up to 30,000 rows and 500 columns.

A maximum of 32K bytes of memory is required to process models, making it practical for one or more users to model without seriously impacting other jobs and users.

Included are a full range of financial routines, complete row and column

manipulation and flexible report writing. Among these are amortization, depreciation, internal rate of return and present value.

Common applications include consolidated budgeting, variance analysis, "what if" and sensitivity analysis, goal seeking and banking liquidity analysis.

Leases for Data*Model range from \$187 to \$746 per month and permanent licenses cost \$4,000 to \$16,000, with quantity discounts available, the vendor said.

Minicomputer Modeling is located at Suite One, 1222 Lakeview Blvd. E., Seattle, Wash. 98102.

McAuto Offers CAD/CAM For DEC Users

COSTA MESA, Calif. — McDonnell Douglas Automation Co. (McAuto) is now offering its Unigraphics interactive computer-aided design and manufacturing (CAD/CAM) system on Digital Equipment Corp.'s PDP-11 and VAX-11/780 systems.

Unigraphics, a stand-alone turnkey system that allows users to design and manufacture products using the computer, is also offered on both DEC PDP-11/70 and PDP-11/34 systems and on Data General Corp.'s Eclipse.

Unigraphics on VAX equipment will range in price from \$75,000 to \$100,000. McAuto is based in St. Louis, Mo. 63166.

Accounting Tool Suits Banks

PROVIDENCE, R.I. — On-line time-shared software designed for commercial banks, savings and loans and mutual savings banks is available from Quantifacts, Inc.

The Account Price/Cost System is used as a profit planning system and enables a bank to determine where it is making and losing money, the vendor claimed. Banks are able to locate problem accounts and use profit/loss summaries, a spokesman said.

The system is available through Interactive Data Corp. and its cost is subject to the amount of computer time used, Quantifacts said. The company may be reached through P.O. Box 2516, Providence, R.I. 02906.

FTW Offers 'CICS/Sort'

NEW YORK — FTW Associates, Inc. has announced a CICS sort module.

CICS/Sort is available to CICS command-level programs written in Cobol, Assembler or PL/I. The package consists of one assembly language module that takes up less than 4K bytes of memory and is distributed in source form.

The module costs \$1,200, the vendor said from 120 Wall St., New York, N.Y. 10005.

TUG Meet to Feature Capt. Grace Hopper

DALLAS — A meeting of the Task/Master Users Group (TUG) will be held here April 12-15. Task/Master is a teleprocessing monitor made by Turnkey Systems, Inc. used in running on-line applications. The user group meets twice yearly to discuss new techniques and shared experiences.

This meeting features E. Floyd Kvamme, president of National Advanced Systems, Lee Keet, president of TSI International and Capt. Grace Murray Hopper, the "Father of Cobol."

The four-day event costs \$100 for TUG members, and \$150 for nonmembers. Additional information is available from TUG secretary Patricia Wojtas, through P.O. Box 866, Norwalk, Conn. 06856.

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Backs X.25 Nets

Dutch Protocol Converter Fits IBM Users

By Brad Schultz
CW Staff

PIJNACKER, Netherlands — A Dutch company is offering American users a protocol converter that allows IBM terminals to support non-IBM mainframes and public data networks based on the X.25 international standard.

The Universal Protocol Interface (UPI) from a software house called Topcode provides protocol conversion, emulation of several terminal types and protocols and the means of interfacing equipment that otherwise cannot communicate directly. UPI also

serves as an intelligent multiplexer.

The microprocessor-based device offers asynchronous to synchronous protocol conversion and vice versa in addition to conversion from one synchronous protocol to another. It was developed jointly by Topcode and Logisterion, a subsidiary of the Dutch high-technology manufacturer Kramers & Zoon.

UPI can connect nonintelligent DP equipment to standard asynchronous or synchronous computer ports for which a certain communications protocol is required, a Topcode spokesman explained. Printers with an

asynchronous RS-232C/V.24 interface, for example, can be connected via the UPI to IBM 2780/3780 terminal ports as well as terminal ports under other protocols, he stated.

What is more, Topcode's UPI can connect equipment on which only asynchronous communications facilities are available to equipment with synchronous interfaces — in other words, rendering asynchronous to synchronous protocol conversion. This permits a personal computer, for example, to run as an intelligent remote batch terminal, emulating such terminals as IBM 2780/3780 models, Control Data Corp.'s Model 200UT and Sperry Univac's Model 1004.

'Full' Terminal

The UPI itself can be a terminal. By adding a means of input and output — for example, connecting a floppy disk unit and/or printer to the UPI's asynchronous ports — the user can run the Dutch product as a "full" IBM 2780/3780 or Univac 1004 terminal, according to the Topcode spokesman. By adding a CRT terminal, the user can have a simulated CDC 200UT for much less than what CDC charges for the real thing, he maintained.

Further, the UPI can connect plotters and graphics terminals to host systems under synchronous protocols. A Dutch shipyard reportedly employs the product to drive Tektronix, Inc. graphics terminals at 4,800- (Continued on Page 54)

Zilog President Expects Z-Net To Parallel Ethernet Architecture

SCOTTSDALE, Ariz. — Zilog, Inc.'s Z-Net local network architecture will be compatible with Ethernet in a few years, according to the Exxon Corp. affiliate's president who spoke here recently.

Z-Net is not presently compatible with the Ethernet local network architecture, but "we are already developing new chip-level technology in parallel with the emergence of Ethernet," Manny Fernandez said at a conference. Digital Equipment Corp., Intel Corp. and Xerox Corp. jointly developed Ethernet, and Xerox has already made the architecture the basis of certain products.

Fernandez speculated that a comprehensive standard for baseband local nets "is at least a few years away." Ethernet was once seen as tantamount to a standard, but the Institute of Electrical and Electronics Engineers (IEEE) is drafting as its local-net standard something different from Ethernet in terms of throughput capacity, among other matters.

Rather than wait for a standard to be established, Zilog will develop Ethernet-compatible systems, very large-scale integration (VLSI) components and a bridge from Z-Net to Ethernet systems, Fernandez stated.

"We will provide Z-Net to Ethernet 'gateway' products that will enable installed Z-Net based systems to migrate upward for future implementations," Fernandez added. "And we will continue to supply independent sales organizations, software houses and other OEMs with complete system tools

... to reap the benefits of local-area networking."

Peer-to-Peer Communication

According to Fernandez, both Z-Net and Ethernet employ a technique of intelligent peer-to-peer communication that "requires a fixed set of conventions that addresses all the communication functions necessary to service a given application. These conventions, or protocols, must be the same in all (Continued on Page 54)

Terminal Thwarts DP Fraud

PARAMUS, N.J. — A portable terminal designed to thwart computer fraud with particular applications in the banking, petroleum, insurance and brokerage industries has been introduced by Computer Transceiver Systems, Inc.

Specially equipped with a wide carriage, Execuport terminals with Sherlock encoding protect confidential data transmissions by transforming the bit pattern of transmitted data into virtually unbreakable cipher, the vendor claimed.

Encryption and decryption are fully automatic, and each unit in the Sherlock-Execuport system incorporates a randomly generated master key, of which only one record exists and is stored in vaulted facilities, the vendor said.

The price of the Execuport terminal with Sherlock encoding is \$3,995 apiece in quan-



The Sherlock-Execuport

ties of 100 or more, with unit pricing available. The vendor can be reached through P.O. Box 15, E. 66 Midland Ave., Paramus, N.J. 07652.

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Data-Doc Serial Port Tester Designed for Trouble-Shooting

AUSTIN, Texas — A new multifunction Serial Port Tester is available from Data-Doc for use in trouble-shooting data communications and data processing equipment.

The SPT-2 Serial Port Tester was designed for use by computer technicians, installers, sales representatives and repair personnel to monitor and analyze commonly used data, status and control lines of the standard EIA RS-232C serial data port.

The compact Tester monitors eight of the most commonly used pins, including "receive data," "transmit data," "data set ready," "carrier detect," "request to send," "clear to send," "data terminal ready" and "busy." It allows for jumping to any of the other RS-

232C lines for monitoring and assertion in place of the "busy" line.

DIP Switch

A six-position DIP switch allows the user to activate the monitored control lines for testing and analysis. Another switch reverses the "transmit data" and "receive data" lines so the user can connect between two data terminal equipment or data communication equipment devices.

The SPT-2 can be mounted in-line in either direction, requires no external power, and the LED display indicators draw minimal current from monitored lines. It is available for \$125 from Data-Doc at 9415 Neils Thompson Drive, Austin, Texas 78759.

Unit Lets IBM Terminals Support Non-IBM CPUs

(Continued from Page 53)

and 9,600 bit/sec off CDC Cyber hosts.

Until now, the spokesman asserted, the only way to drive graphics terminals with a CDC system was through time-sharing ports at slower speeds.

As for conversion from one synchronous protocol to another, many minicomputers cannot do this, he continued, and restrict the user to IBM's 2780/3780, preventing links to many mainframe brands. UPI can thus do much to allow networking of many kinds of systems.

Besides the interconnection features, the device has an off-loading effect, the spokesman observed, because the

terminal emulation and all protocol-related processes — such as calculation of cyclic redundancy checks and longitudinal redundancy checks — are performed by the UPI, not a CPU. When a minicomputer, for example, is connected to a host computer system via the UPI, its processing capacity reportedly will not decrease dramatically, since the UPI — not the mini — takes charge of protocol usage.

Topcode will soon release an X.25 support capability for the UPI that transforms the device into a packet assembly and disassembly device (PAD), allowing IBM customers extended access to the X.25-based public data networks, the spokesman noted. Users can get this and other protocol support capabilities through exchange of programmable read-only memory (Prom) modules.

The UPI comes with a 4K-byte Prom and either 2K- or 16K bytes of random-access memory. Based on the Motorola 6502 microprocessor, Topcode's product has one synchronous port and up to three asynchronous ports in the standard model.

The device handles Ascii, Binary Coded Decimal, Ebcidic and other user-specified data formats at speeds in the 75- to 9,600 bit/sec range. At present, supported protocols include IBM 2780/3780, 3270 and Hasp workstation; CDC 200UT; Honeywell, Inc. Bull VIP; and Univac 1004.

UPI prices vary between \$6,500 and \$8,000, depending on number of ports, memory capacity and software required. The product comes with a three-month warranty, but Topcode provides no maintenance contract, claiming the unit's reliability makes such a contract unnecessary.

The Dutch firm is looking for a U.S. agent. Until it finds one, Americans should deal with Topcode directly at Pasteurlaan 11, 2641 ZC, Pijnacker, the Netherlands.

Ethernet Parallel Sighted for Z-Net

(Continued from Page 53)

network stations that wish to communicate."

The IEEE has only addressed the lower level protocols of local networking, Fernandez pointed out. Lower levels concern interfacing of equipment and the details of passing data between terminals and the network, while higher levels concern procedures for passing data through the network, distributing data to applications and handling processing sessions.

Zilog and Xerox have gone different ways in developing higher level protocols for local networks, Fernandez noted, but users should have a means of reconciling Z-Net and Ethernet by 1985.

In the interim, Zilog may concentrate on selling Z-Net products to OEMs and systems houses, rather than end users, in order to hasten acceptance of the architecture and local networking among vendors, perhaps also keeping the field of competitive architectures from growing much broader, Fernandez hinted.



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Interface Offered To System/34, 38

ATLANTA — Technical Analysis Corp.'s Microprocessor Products Division has announced an IBM System/34 and System/38 interface and 3270 interface for non-IBM output devices.

The IF/1A System 34/38 output interface is said to provide plug compatibility between System/34, System/38, 5250 IDS and non-IBM serial asynchronous RS-232C output devices.

The IF/2A provides plug compatibility between 3270 controllers with Type B adapters and non-IBM serial asynchronous RS-232C output devices.

Standard features of the IF/1A and IF/2A include XON/XOFF and CTS protocol support for output peripherals, conversion of all standard Ebcidic characters to Ascii and an internal self-test function to verify interface operation.

Other features include an output test to verify operation of attached output devices and rate selection in standard units from 110- to 19,200 bit/sec.

The IF/2A additionally features dual 1,920- or 480-char. channel buffers, a company spokesman said.

The units cost \$1,995 each in minimum OEM quantities from the firm at 120 West Wieuca Road, N.E., Atlanta, Ga. 30042.

Assembly Tool Emulates VT52

NEW YORK — An assembly language emulator designed for the Datapoint Corp.'s 1800/3800 to emulate Digital Equipment Corp.'s VT52 terminals has been introduced by Program Resources, Inc.

The VT52 emulator allows applications to run either from a stand-alone Datapoint 1800 microcomputer or from a Datapoint 3800 terminal attached to the Datapoint ARC, the vendor claimed.

All features of the VT52 are emulated including full cursor positioning and the connection is full-duplex at 4,800 bit/sec, the vendor said. A security scheme is part of the software system and the code has automatic error detection and recovery features, the company said.

The VT52 emulator is priced at about \$6,000 and is available from Program Resources, Inc., 369 Lexington Ave., New York, N.Y. 10017.

Controller Board Offers Communications

PALO ALTO, Calif. — A controller board designed as a self-contained microcomputer with CPU, read-only memory, random-access memory and input/output and suited for communications applications has been introduced by Giltronix, Inc.

The General Purpose Controller Board contains 12K bytes of erasable programmable read-only memory (Eprom), 4K bytes of static random-access memory, an interrupt controller and 68 I/O ports, the vendor claimed.

The board is available in kit form for \$599 or in an assembled and tested form at \$899 from Giltronix, Inc., Suite 44, 450 San Antonio Road, Palo Alto, Calif. 94306.

Unit Replaces Dashers

ANN ARBOR, Mich. — Ann Arbor Terminals, Inc. has announced Model DG-Compat, a CRT terminal that emulates the code structure and functions of Data General Corp.'s Dasher D100 and D200 terminals.

Aimed at users of DG's Eclipse, Nova, Micronova and CS processors, the terminals feature 95-key detached keyboards, a 20-key function keypad and send and print rates from 110-9,600 bit/sec, according to a vendor spokesman.

The Ann Arbor terminals cost \$1,600.

Ann Arbor Terminals is located at 6175 Jackson Road, Ann Arbor, Mich. 48103.

Gandalf Fiber-Optics Debuts Include Modems, Mux

WHEELING, Ill. — Gandalf Data, Inc. has announced its first entries into the fiber-optics market, including two modems and an asynchronous multiplexer. It also introduced a data switching system that is said to service up to 512 terminals and 256 ports of resources.

The FA 1 modem handles data conversion up to 80K bit/sec asynchronous full-duplex data transmission link, and the FS 1 handles 300 to 252K bit/sec synchronous full-duplex data transmission link, the vendor claimed.

The FX 8 is an eight-channel multiplexer with integral synchronous data link and channel speeds up to 20K bit/sec and link speeds up to 240K bit/sec.

The FA 1 is priced at \$625, the FS 1 at \$750, and the FX 8 at \$4,000.

The Private Automatic Computer Exchange (PACX IV) data switching system handles 256 simultaneous connections at 9,600 bit/sec asynchronous or 19.2K bit/sec synchronous and can provide up to 128 service classes with network reconfiguration by either front panel without service interruption, the vendor claimed.

A single PACX servicing up to 256 incoming lines, including basic main-frame and common logic, is priced at \$14,700, and the dual model servicing up to 512 incoming lines is priced at \$22,200. Gandalf Data, Inc. is at 1019 S. Noel, Wheeling, Ill. 60090.



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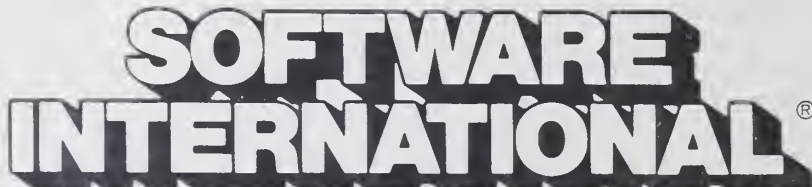
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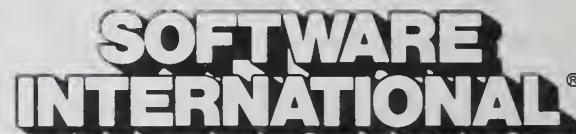
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School Desktop Units Handle Administration, Test Input

LONG BEACH, Calif. — A series of desktop data entry terminals designed for inputting objective test answers, attendance data, student grades and registration and class enrollment has been announced by Scan-Tron Corp.

The Model 2012 is an optical mark reader that converts pencil marks to digital information that is then sent to the mainframe, the vendor said. The school administrators then receive test scores and analyses.

The Model 2012 is priced at \$3,950 from Scan-Tron Corp., E. 70 St., Long Beach, Calif. 90805.

Quantum Introduces Disk Drive With Microprocessor Control

SAN JOSE, Calif. — A 40M-byte fixed disk drive with full Shugart Associates SA1000 interface and microprocessor control of drive function is available from Quantum Corp.

The Q2040 features a heat dissipation rate of 70W and an average access time of 65 msec, with a 15-msec track-to-track access time and 100-msec maximum access time, the vendor claimed.

The Q2040 is priced at \$2,100 from Quantum Corp., 2150 Bering Drive, San Jose, Calif. 95131.

Elgar Aims Power Conditioner At High-Tech, Computer Market

SAN DIEGO — Elgar Corp. has announced an ac power-line conditioner aimed at the computer, process-control and high-technology electronics market.

The firm's power conditioners offer noise attenuation and line regulation to minimize errors produced by brownouts or line voltage disturbances, the vendor claimed.

Prices start at \$450, the vendor said from 8225 Mercury Court, San Diego, Calif. 92111.

Ramtek Colorgraphic Devices Get Deskside Cousoles

SANTA CLARA, Calif. — A deskside console is now available on Ramtek Corp.'s 6212 and 6214 Colorgraphic computer devices.

The new console weighs half of the original package and was designed to save space and maximize flexibility in positioning.

The deskside console costs \$16,000 on the 6212 terminal and \$21,900 on the 6214 stand-alone computer, the vendor said from 2211 Lawson Lane, Santa Clara, Calif. 95050.

DDP Seen Coming of Age Despite Years of Resistance

By Tim Scannell
CW Staff

IRVINE, Calif. — Resistance has shown itself in the form of countless conflicting definitions and years of "let's keep computing at home where it belongs" arguments. However, despite these minor drawbacks, distributed data processing (DDP) has come of age and is currently a fact of corporate life.

But there are still some rough waters ahead for the beleaguered technology. Namely, what impact office automation, electronic mail and other office-of-the-future gremlins will have on the continued development of DDP. And some scattered last-ditch efforts by dyed-in-the-wool centralized computing aficionados to keep all of their computer cards under one roof.

Office automation is an area "that's going to bust this thing (DDP) wide open," Lovell Chase, vice-president of sales for Microdata Internal, Inc., said here during a recent interview. "Right now, office automation is at a point where DDP was four years ago," which is only just the "tip of the whole iceberg."

Sandbagging Managers

While most managers have learned to accept DDP as a partner rather than an infringement to their centralized shop, there are still some corporate DP heads who prefer to sandbag the issue, Chase commented.

Previously, "we went through a situation where we thought six centralized computers would handle the world's processing problems," he continued. However, then "we realized that's not the case." Unfortunately, many managers still feel "that the way to do processing is to bring it all under one roof."

Although Chase couldn't offer any solu-

tions for the impending office automation problems that are reportedly breathing down the neck of DDP, he did note that the concept is generating a considerable amount of controversy within companies facing the technology. Especially in the form of power struggles between the office manager and corporate DP head over who has control and who has access to the central mainframe.

While Chase may seem a bit biased toward DDP — since his company's business is almost totally concerned with marketing DDP-aimed minicomputer systems such as its Reality series — he insists that DDP will be the "mainstay" of the future for a number of noncompany reasons. For instance, the much-publicized shortage of programming talent makes it necessary to spread the coding wealth over greater DP areas.

And as central-site work becomes more specialized and exotic — filled with such things as involved model building and total-picture perspectives — more pressure will be put on divisional and departmental heads to take care of their own DP laundry and submit summary data to the central data base, Chase explained.

"From a hardware standpoint, we could build the biggest thing in the world to handle everything," he added. But "the problem is having people who are available and who can define a problem, program for it, implement the program and have it operational all within a reasonable time frame."

Vendors as Heroes

DP snobs who previously chose to ignore the remote processing station as a "thorn in their sides," slowly began to recognize the need for these distant files. Surprisingly, the

(Continued on Page 58)

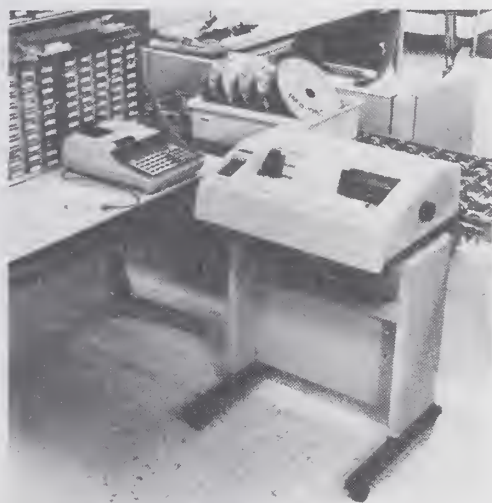
HP Printer Has Factory Option

PALO ALTO, Calif. — A printer with an option said to provide automatic bar-code printing, mark-sense printing and form generation as well as 180 char./sec alphanumeric printing is available from Hewlett-Packard Co.

The HP 2631G Graphics Printer with Factory Data Printer option can generate order forms, shop dispatches, monthly production reports and other forms.

It has handling features including programmable tabs, vertical forms control and enough pressure to print up to six-part forms, the vendor claimed.

The HP 2631G printer is available with a 10-week delivery time and is priced at \$5,500 with the Factory Data Printer option from Hewlett-Packard Co., 1507 Page Mill Road, Palo Alto, Calif. 94304.



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Access Module Secures Terminals

SANTA FE, N.M. — An access module and control system that reportedly secures a computer terminal by dis-

abling its ability to communicate with the computer system has been unveiled by Intelsec Corp.

Each TAC II access module is about the size of a cigarette pack and is said to be guaranteed to be unique in more than four billion units manufactured.

User Responsibility

Once the module is issued to a user, the user is totally responsible for whatever occurs on the assigned terminal. When the user is through with the terminal, he returns the access module and his responsibility for that terminal is relieved.

The method bars unauthorized personnel from the computer and automatically monitors the authorized user, a company spokesman said.

The access module costs \$425 from Intelsec, P.O. Box 5463, Santa Fe, N.M. 87502.

Burroughs Adds Bank System

DETROIT — Burroughs Corp. has unveiled a document processor designed for centralized or distributed document processing in banks and savings and loan associations whose processing volumes range from 100,000 to one million daily.

The B9190 Micr/OCR features improvements such as new mechanisms that feed, route and track Micr and OCR-encoded documents to their respective sorting pockets and multiple microprocessor architecture.

The product can process up to 1,625 documents per minute and costs between \$120,000 and \$285,000, depending on options purchased, the vendor said from Detroit, Mich. 48232.

DDP: Fact of Corporate Life Despite Years of Resistance

(Continued from Page 57)

heroes in the DDP acceptance struggle were the minicomputer vendors who led end users out of the mini- mid-maxi- micro jungle and said, "Look, don't worry about the whole model, do it here. Then if you want to communicate with the mainframe, there is a communications vehicle," Chase noted.

The DDP Call

"If we had relied upon IBM, we wouldn't be as far along as we are now," Chase said, pointing out the slowness of large mainframe builders to respond to the DDP call.

On the other hand, minicomputer manufacturers have added to the DDP definition confusion by establishing terms and cut-and-dried explanations to neatly fit their product line, the sales vice-president said.

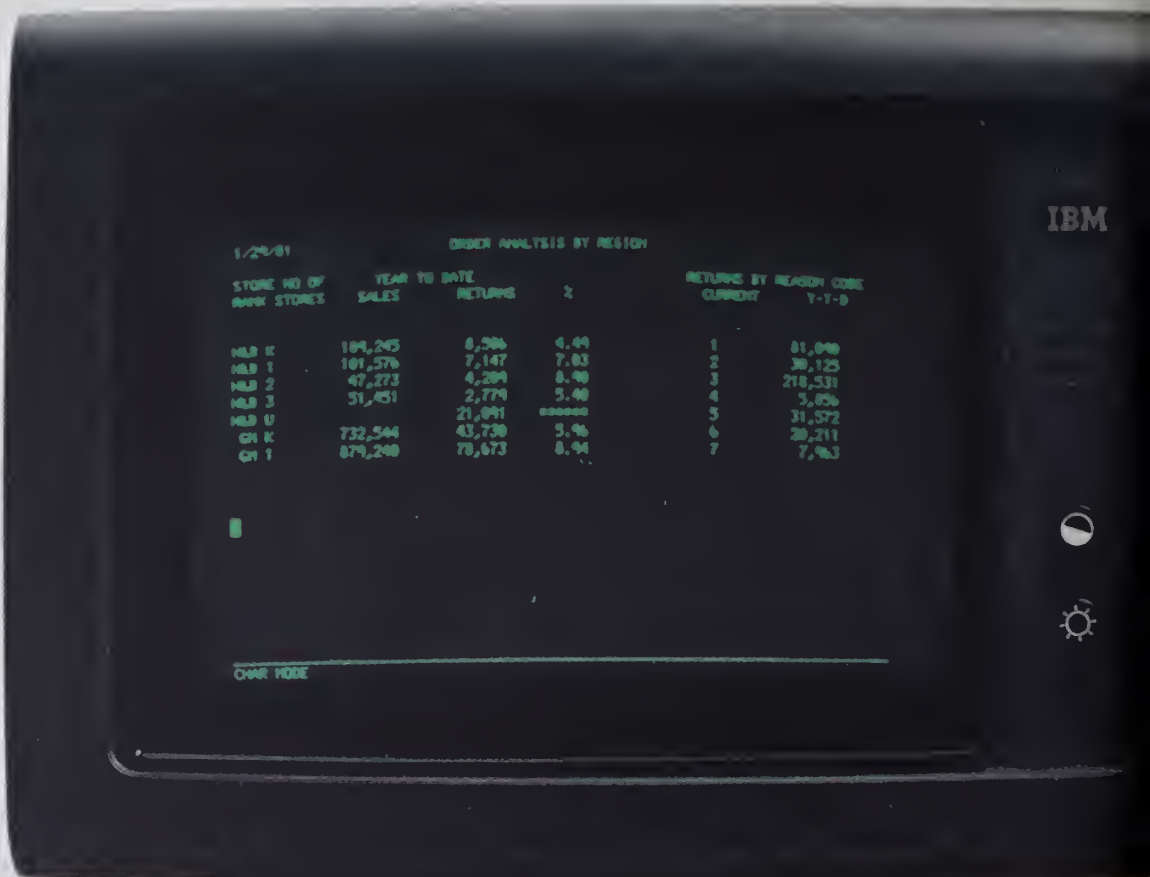
Since no one company can satisfy all DDP activities, either official or de facto definitions have been set to meet selling capabilities and limitations, he added.

However, these rollercoaster rules

have not proved to be too much of a hindrance to DDP's progress. The same thing, for instance, happened with management information systems (MIS).

Even though "when you talk to 10 different people you get 11 different answers," managers still basically understand the concept of MIS, Chase remarked.

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Cica to Offer Audit Course

ST. PAUL, Minn. — The Canadian Institute of Chartered Accountants (Cica) will be presenting its five-day seminar, "Computer Auditing," in five different centers this spring. The program is slated for Washington, D.C., March 2-6; Hartford, Conn., April 6-10; San Francisco, May 11-15; and New York, June 8-12.

This program is based on the institute's publication, "Computer Audit Guidelines," and is designed to help the auditor understand the structure of information processing.

Registration is \$695 per person. Complete details are available from Stephanie Gaubatz, RHY Consultants, Inc., P.O. Box 21026, St. Paul, Minn. 55121.

Illinois Recovery Center to Open

RADNOR, Pa. — Sun Information Services Co. will open a third Sungard disaster recovery center in a Chicago

suburb this fall.

The center will be accessible from O'Hare Airport and will provide cli-

Workstation Scans Documents

NORRISTOWN, Pa. — A series of applications-expandable workstations focusing on operator productivity, information accuracy and improved cash management has been announced by Scan-Data Corp.

The Scan+Plus workstation directly scans up to 6,000 documents per hour in continuous feeding applications and can be located either at remote locations or in the central DP center, the vendor claimed.

The standard Scan+Plus workstation consists of a medium-speed document

transport, a single-line numeric optical character recognition (OCR) reader, a document view station, two program-selectable output stackers and a key-station that may be used as a key-disk facility or for OCR-related data entry or correction.

The Scan+Plus workstation is available as a stand-alone system at about \$40,000 or in a clustered environment for about \$15,000.

Scan-Data Corp. is headquartered at 800 E. Main St., Norristown, N.J. 19401.

ents with the use of IBM mainframes within four hours' notice of a client disaster, the vendor said.

Sungard will also provide a pre-conditioned computer room for the immediate installation of replacement equipment, office and terminal space to allow computer-related work to continue and on-site technical support, the company said.

Sungard III will sign on a limited number of client subscribers at \$6,500 per month for a one-year contract, and \$5,500 per month for a three-year contract.

Sun Information Services, Inc., is located at 280 King of Prussia Road, Radnor, Pa. 19087.

System Digitizes Film Images

ALTADENA, Calif. — A Digital Video Input Processor (DVIP) that acquires and digitizes images from film has been introduced by Comtal Corp., a subsidiary of 3M Corp.

The DVIP reportedly compensates for variations and noise normally introduced during the image acquisition process by integrating each picture element (pixel) to maximize its own signal-to-noise ratio.

Images can be transferred to a Comtal Vision One/20 digital image processing system at 10M byte/sec or to a host computer. Images also can be displayed on a raster scan black-and-white CRT monitor that is a part of the system.

The DVIP system includes a video camera, a light table with camera stand, the CRT monitor and system electronics. It can be used for digitizing x-ray film and other types of film transparencies.

Cost of the DVIP system ranges from \$25,000 to \$40,000, the vendor said from 5118 Vineland Ave., N. Hollywood, Calif. 91601.

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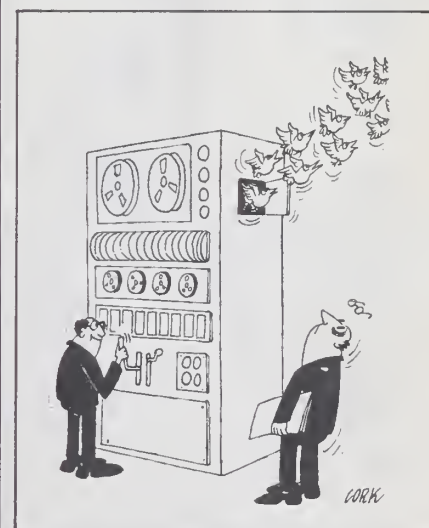
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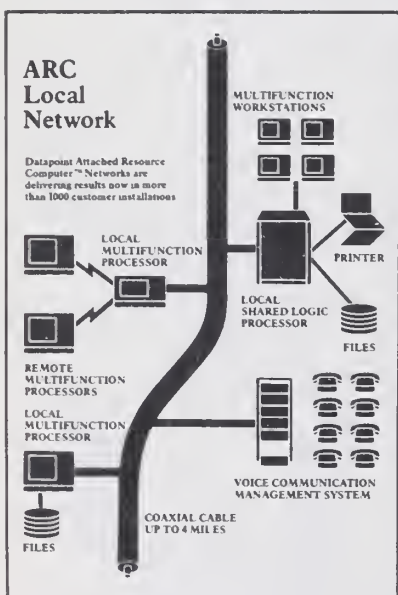
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Datapoint introduced local networking over three years ago. Now more business is processed on ARC™ coaxial networks than all other cable systems combined.



ARC networks enable workstations, processors, printers, and files to be linked together so that all resources are available to all users. Shared access brings significant economies while uniting all members of an organization with a high-speed artery for information exchange.

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Vic Poor is Executive Vice President of Research and Development at Datapoint. He pioneered dispersed data processing, designed the first computer-on-a-chip, and developed ARC™ — the most widely used coaxial network for linking business machines.

may access physically distributed files as a common information base containing both words and data. And this information base may be organized to match a company's structure with comprehensive security controls at all levels.

You decide what to start with, what to add next.

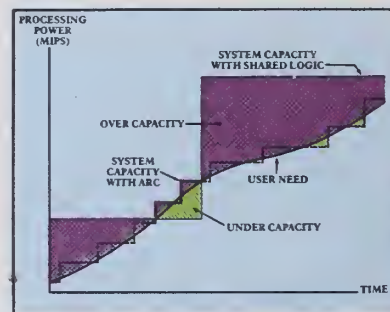
Start with a single workstation or a small cluster. Order data processing and word processing to begin. Graduate to communications management and electronic mail as you go along. Or vice versa.

A choice of compatible processors and a broad range of peripherals allow you to match capacity precisely to the job.

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And Datapoint word processing offers you a productivity tool no one else can. It's AIM™, Datapoint's Associative Index Method™. It brings automation to the filing cabinet at last.

With AIM you can search files and documents by their content. You don't need to know the document number or title. Search by subject or a remembered phrase. AIM will find every document or data file in which the key words occur.

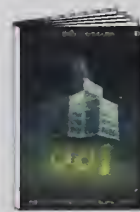
Electronic message capability allows completed documents to be transmitted to other Datapoint workstations, cutting paper work and speeding communications. You can even use it to send file updates and new application programs to your geographically dispersed processors.

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DATAPOINT

MULTIMEDIA

Incorporates Z80 Chip

Datapoint Boosts 1500's Speed, Memory

SAN ANTONIO, Texas — Datapoint Corp. recently unveiled an enhanced version of its Model 1500 diskette-based computer system featuring increased processor speed and more disk capacity.

The 1550 is aimed at the small business market and can serve as a desktop computer or telecommunications network component. The system can reportedly be used for data entry, data processing, word processing and electronic messaging, and can support multiple workstations in a time-sharing mode.

Although the 1550 system is based on the 1500, introduced in late 1977, the newer machine incorporates a higher speed Z80A microprocessor chip. The former system uses a first-generation Z80 chip. The 1550 includes either 32K, 64K- or 96K bytes of memory.

The processor has a concurrent job feature that allows it to perform printing or communications tasks while processing. In addition, the processor also has a

built-in communications interface allowing automatic call answering when attached to a user-supplied modem, a spokeswoman said.

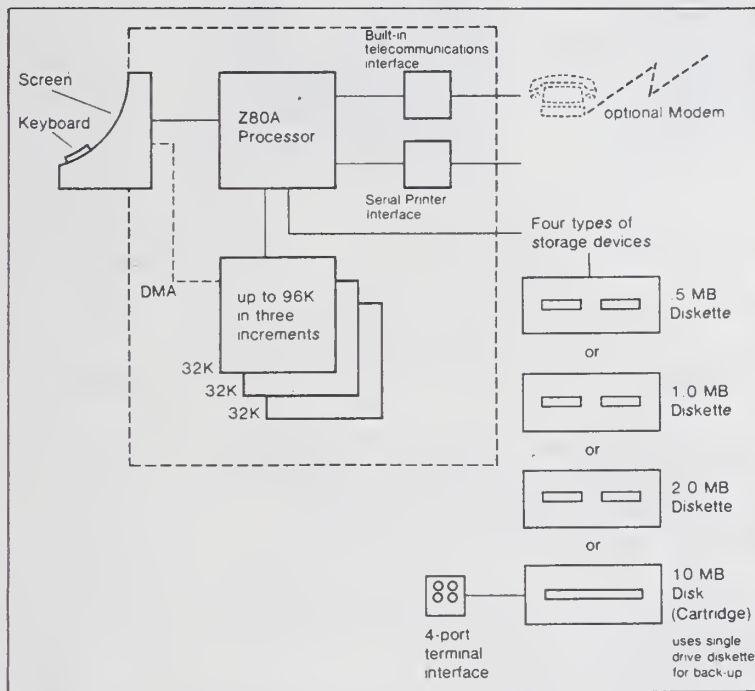
The 1550 can be configured with double-density diskette drives in either single or double versions, the spokeswoman explained. This is said to allow the user a choice between 1M- and 2M-byte drives; the former will be available sometime later this year.

Additionally, the 500K-byte drive used for the original 1500 family will be offered for the 1550.

Extension Drives

The 1550 supports up to three extension drives, providing up to 8M bytes of diskette storage on one 1550, the spokeswoman pointed out.

A 1550 with 64K bytes of memory can support the firm's 9310/9320 10M-byte cartridge drive, for those users that seek hard disk storage, more capacity and faster access times. The 9310



Datapoint 1550 System Architecture

consists of a disk drive and controller, while the 9320 includes a disk drive, controller and four-terminal serial interface, the

spokeswoman said.

The addition of three extension drives means one 1550 can support up to 40M bytes of on-line disk storage.

As for software, the Datapoint entry supports the company's Dabus Business programming language, as well as Fortran and Basic Plus. The computer can also be utilized for interactive IBM mainframe communications using Datapoint's EM3270 software. (Continued on Page 62)

GA Alters Prices on CPUs, Memory

ANAHEIM, Calif. — General Automation, Inc. has announced price increases on its primary processor lines and certain optional equipment, as well as reductions on most semiconductor memory prices.

The increases concern the firm's 16 series models GA16/220, -230, -240-, -460, -470 and -480. The options affected are "directly associated with the processors rather than being peripherals," according to a company spokeswoman.

The lower semiconductor memory prices affect the firm's 32K-byte, 64K-byte and 128K-byte memories, all designed for use with the 16 series. Not affected by the price reduction is the firm's Hypak memory.

Combined with the lower memory prices, the composite increase to the firm's product lines is 8-1/2%, the spokeswoman explained. Specifically, the price for the 16/230 was \$6,650 and is now \$7,325, a 10.2% increase. The 16/240 formerly cost \$8,500 and now costs \$9,000, a 5.9% increase.

The GA16/470 was priced at \$16,000 and now costs \$16,750, a 4.7% increase; and the price for the 16/480 went from \$19,250 to \$20,250, a 5.2% increase. The company said although "significant cost-saving measures" had been taken in manufacturing and purchasing, they could not offset increases in material, labor and overhead.

At the same time, the company

announced a restructuring of the multiple-use license agreement for operating system software "to be more consistent with industry practices," the spokeswoman said. (Continued on Page 62)

Unit Ties DEC, Wang WP

FEASTERVILLE, Pa. — Alphamatrix, Inc. has announced a means of transferring data between the Digital Equipment Corp. WPS-11 Protocol and the Wang Laboratories, Inc. Synchronous Protocol.

The Communicator is said to manage the incompatibilities of the two protocols, answer the telephone, preserve the word processing formats and file names and perform all required checks

to assure valid data transfers.

Available in two models — BAE-805 (RS-232C) and BAT-805 (TTY 20 mill) — the unit is reportedly compatible with DEC AS/DX protocols and the Wang 2780 Emulator. It features automatic code conversion and speeds to 2,400 bit/sec.

Base price for the unit is \$2,725 from Alphamatrix at 1021 Millcreek Drive, Feasterville, Pa. 19047.



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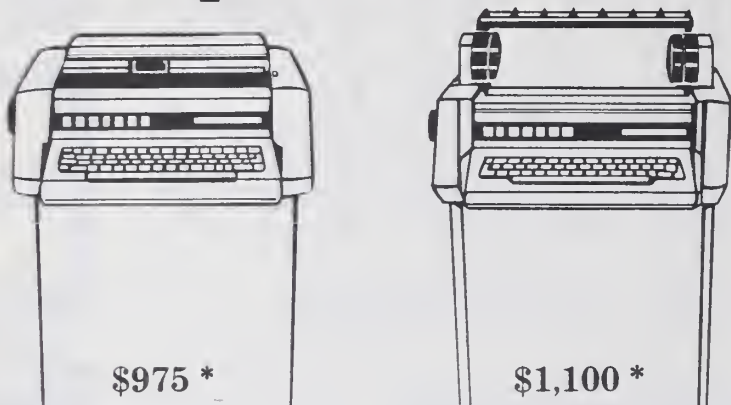
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Xmark Offers Upgrades For Office Systems Line

COSTA MESA, Calif. — Xmark Corp. has introduced a hardware/software enhancement package for its line of information processing systems that includes the desktop stand-alone Office Mate, Maxi Cluster multiple workstation system and the Maxi Cluster multiuser, multifunction, multiple terminal system.

The software package includes Math Upgrade, which allows Xmark users to type columns of numbers, headings and totals and to manipulate them using automatic arithmetic operations; Command Code Set, which permits the operator to reduce the number of keyboard strokes needed to perform an operation; comprehensive business software; and two communications interfaces — a Univac UT200 emulator that allows communications with any host using the Univac UT200 protocol and a gateway to the Wang Computers, Inc. Mailway system.

The hardware enhancements include the incorporation of the New World Computer Co. 5.25-in. and 8-in. Winchester technology fixed disk drives.

The New World Minimikro-Disk V offers the combined storage capacity of up to 16 minifloppies on one 5.25-in. drive. Available only on the Office-Mate, the Minimikro disk offers an average access time of 8 msec, a 37-fold increase over the 298 msec average of most minifloppies, according to the vendor.

The 8-in. Micro-Disk VIII is available on all Xmark systems and has a capacity of 2.1M- or 4.2M bytes. Its multiple-head assembly (20 heads) allows it to access the storage in 8 msec, up to 30 times faster than a conventional floppy disk and up to 10 times faster than a standard Winchester

drive, Xmark claimed.

An optical scanning page reader unit that inputs typewritten data into the word processor is available on any of the office automation systems.

The Math Upgrade/Command Code Set costs \$1,000; each of the business applications costs \$2,000, except for Sales Order-Purchase Order Control, which costs \$1,000. The Univac UT200 emulator costs \$700 for the software, which also requires a \$1,500 Xmark communications controller.

The Minimikro-Disk V costs \$14,975 and the Xmark Office Master with Mikro-Disk VIII with 2.1M-byte microdisk and 8-in. floppy costs \$17,975 or \$18,975 for the 4.2M-byte unit. The optical scanner with OCR-B font costs \$10,000.

Xmark is located at Suite 119, 3176 Pullman St., Costa Mesa, Calif. 92626.

LSI-11 With 64K Offered for \$995

HARTFORD, Wis. — General Robotics Corp. is offering the Digital Equipment Corp. LSI-11/2 with 64K bytes of memory for \$995 for a limited time.

The memory board is the GRC MSV11, a general-purpose memory card featuring 250 nsec access time, 500 nsec cycle time, 32,768 by 16 bit capacity and 18 address lines. The MSV11 also offers switch-selectable configurations and uses one dual height module slot.

Quantities are limited, the vendor said from 57 N. Main St., Hartford, Wis. 53027.

Datapoint Boosts Memory, Speed of 1500 Series

(Continued from Page 61)

ware package. Software for IBM batch communications, 2780/3780, is also available, the spokeswoman said.

Finally, the desktop system can be used with a variety of commercially available operating systems to fit existing business and engineering applications.

Base Price

The base price of the 1550 with 32K bytes of memory and a 500K-byte disk drive is \$7,075. The 1M-byte version costs \$8,075 while the 2M-byte model sells for \$9,075. Additional 500K-byte

drives cost \$3,800, and the 1M-byte and 2M-byte drives cost \$4,150 and \$5,795, respectively.

Additional 32K-byte memory expansion boards sell for \$650 each.

With the 9310 and 9320 hard disk features, the 1550's price tag with 64K bytes of memory runs from about \$18,250 to \$18,750. Additional hard disk drives cost about \$10,400 each.

Maintenance for the system is covered under Datapoint's national customer service organization, the spokeswoman said from the firm at 9725 Datapoint Drive, San Antonio, Texas 78284.

GA Revises Price List

(Continued from Page 61)

man said. Under multiple-use license agreements, on a single-use basis, a customer buying only one processor will pay \$2,500 for the operating system software instead of \$5,750, as previously.

On a multiple-use basis, the firm previously charged a one-time fee of \$11,500 for any additional CPU requirements after the initial \$5,750 fee, the spokeswoman explained. Now GA is offering two options.

First, after the initial system is purchased, the user can purchase additional software on a "per-CPU" basis at \$600/CPU. Secondly, for OEMs dealing with large volumes of minicomputers, GA will charge after the first purchase \$6,000 per year for unlimited use of the operating system software. The price includes \$1,000 worth of update services.

General Automation is located at 1055 Southeast St., Anaheim, Calif. 92805.

Hitachi Expands Plug-Compatible M Series

NEW YORK — Hitachi Ltd. of Japan has expanded its M series of computers, adding two new processors and 25 software programs for use primarily in conjunction with its Virtual Storage Operating System 3 (VOS3).

The new system will not be marketed in the U.S. Moreover, the company has not yet decided whether it will offer the systems for sale to U.S. companies that market Japanese-built mainframes such as National Advanced Systems, a spokeswoman said.

The largest of the two new systems is the M-280H, which Hitachi said is in a perfor-

mance range beyond IBM's 3081. The processor can be configured with 32M bytes of main memory and has 32 channels. Large-scale integrated chips having 1,500/550 gates per chip are employed in the system, the vendor said.

The second system, the M-240H, is said to be beyond the performance range of IBM's 4341 Group 2. The system is reportedly equipped with the performance of a large processor, but is designed to occupy less than one square meter of floor space.

Hitachi also introduced 25 software products to support the two new systems. Seven

of these products are for enhancing the functions of control program for the operating systems — the VOS3, VOS2 and the Virtual Machine System. Eighteen other programs address the productivity of software production and distributed processing function of the VOS3, Hitachi said.

The company claimed the new systems are IBM plug-compatible.

The processors will be available in Japan sometime between October 1981 and March 1982.

The approximate monthly rental charges
(Continued on Page 66)

COMPUTER INDUSTRY

• Intel Sues Ex-Employees To Halt Use of Trade Secrets

By Bill Laberis
CW Staff

SANTA CLARA, Calif. — A manufacturer of semiconductor memory chips here has filed suit against four former employees seeking to prevent them from using trade secrets in producing and marketing chips on their own.

The suit Intel Corp. filed recently in California Superior Court maintains that former employees are bound by a contrac-

tual agreement with the company not to divulge trade secrets acquired while in the employ of Intel and should not use the secrets "within a reasonable period of time" to produce and market the latest state-of-the-art integrated circuits made by the company.

Named in the suit were Gordon Campbell, former marketing manager of Intel's Special Products Division, Larry Jordan, a former strategic marketing man-
(Continued on Page 64)

• Federal Judge Throws Out Fraud Charges Against CSC

ALEXANDRIA, Va. — All remaining charges that Computer Sciences Corp. (CSC) defrauded the government in billing for computer services were thrown out Feb. 13 by a federal judge here.

The 14 counts of misbilling the government were dropped by Judge Richard L. Williams, who ruled the government had failed to maintain proper security during the grand jury investigation that led to the indictment.

The charges were against CSC, headquartered in El Segundo, Calif., and five present and former company employees, John W. Luke, Thomas A. Marti, Norman W. Derrick, Erwin L. Allen and Peter C. Loux [CW, Oct. 20].

Another defendant, Herbert G. Blecker, president of Icarus Corp., a CSC subcontractor, also benefitted from the judge's decision. Williams dismissed the charges "without prejudice," meaning the government can bring new charges if it wants.

Appeal Option

Prosecutor William L. Lynch said recently the Justice Department will wait until Williams issues his written decision before
(Continued on Page 64)

DG Reshuffles Into Three Divisions

WESTBORO, Mass. — Data General Corp.'s creation of three new business divisions, each devoted to a specific segment of the DP market, appears to be the most massive reorganization in the company's history.

In addition to establishing the new divisions, DG also set up a corporate research and development group, which will be headed, for the time being, by Edson D. de Castro, the company's president.

The three divisions are the Information Systems Division (ISD), devoted to business and scientific applications for larger users; the Small Business Systems Division (SBSD), dedicated to systems for smaller compa-

nies; and the Technical Products Division (TPD), specializing in technical, real-time and industrial systems builders, laboratories and OEMs.

The new divisions will have complete responsibility for business planning, marketing, product development and profitability within their specialized realms.

Although DG in the past year has experienced squeezed profit margins and a softening of orders for its bread-and-butter low-end Micronova, Nova 4 and CS small business systems, the reorganization is not a result of this recent downturn, a company spokesman maintained.

"The new divisions are an obvi-

ous and natural extension of our business strategy. Each business division is structured to have
(Continued on Page 66)

MSA to Go Public

ATLANTA — Management Science America, Inc., (MSA) has filed a registration statement with the Securities and Exchange Commission in connection with a proposed initial public offering of 1.5 million shares of common stock.

Of the total, 950,000 shares will be sold by the company and 550,000 shares will be sold by certain shareholders.

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used to repay debt, furnish working capital and provide capital for possible acquisition of companies, products and equipment.

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Company Forms to Provide Lease Financing Programs

SAN JOSE, Calif. — Providing lease financing programs to manufacturers of high-technology products is the idea behind the recent formation of Western Technology Investment Corp. here.

"There is a tremendous infrastructure for supporting start-up companies in Silicon Valley," explained Ronald W. Swenson, a founder and president of the company. Swenson was formerly marketing director for Magnuson Computer Systems Corp., a late 1970s start-up that went public last summer.

In particular, there is an abundance of venture capital and subcontractors available to start-up firms. However, the missing piece of the package is lease financing, which is essential for a successful marketing program, Swenson noted.

Backing for Western Technology Investment comes from several computer industry luminaries including Dr. Gene Amdahl, a founder of Amdahl Corp. and more recently Acsys Ltd.; Carl Amdahl, executive vice-president of advanced technology and development for Magnuson; and Ray Williams, a founder of both Amdahl and Magnuson.

The company, formed in January, will structure and finance lease programs primarily for computer and computer-based equipment manufacturers. Typical products for these companies include office automation equipment, semiconductor test systems, robotics and voice and data communications systems.

Joining Swenson in the venture is S. Allan Johnson, formerly controller of Magnuson.

Judge Throws Out Fraud Charges Against CSC; Contract Ban Lifted

(Continued from Page 63)

deciding what action, if any, to take. Besides seeking a new indictment, the government also has the option of appealing the judge's dismissal ruling.

The written decision is also expected to explain why Williams last month threw out 43 counts of the original 57-count indictment that charged CSC with racketeering; bribery and fraud in obtaining and billing its 1972 \$100 million Infonet contract to supply federal agencies with teleprocessing services [CW, Jan. 19].

Under the terms of Williams' ruling, the government may not bring new charges against defendant Derrick. According to the judge, the government failed to tell Derrick he was a target of the investigation when he was called to testify before the grand jury.

Explaining his ruling, Williams told a Feb. 13 hearing on defense pretrial motions that in contravention of grand jury rules, the government had allowed U.S. marshalls, court personnel and a maintenance worker to enter the grand jury room while the panel was in session.

Williams said the unauthorized access of those persons constituted probable prejudice to the grand jury's de-

liberations.

In a related matter, the General Services Administration (GSA), the federal purchasing agency, said it has lifted its suspension of CSC government contracting.

The suspension, initiated in November following the indictment, was later relaxed after an internal CSC reorganization persuaded the GSA it could better audit its contracts with CSC.

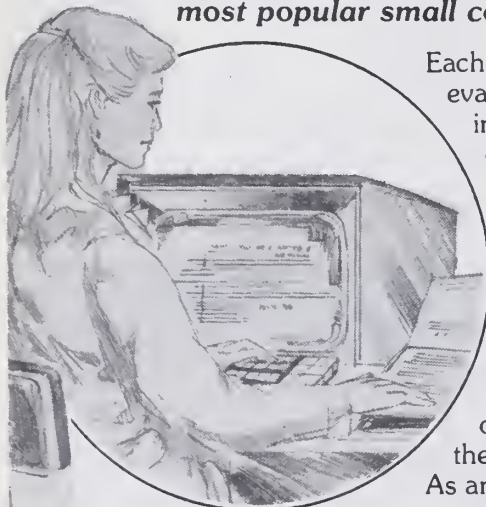
Frank Carr, commissioner of GSA's Automated Data and Telecommunications Services, said a letter was sent to CSC Feb. 17 informing the company the suspension was ended. Carr said the suspension was not justified now that criminal charges are no longer pending against the firm.

Carr also said GSA will proceed with negotiations with CSC to recover money the government claims the firm obtained through overbilling in its Infonet contract.

In a 1978 audit, GSA said in 1975 alone CSC had overbilled the government almost \$950,000. The prices of recovering those monies and looking for any additional overbilling was halted at the request of the Justice Department until after the criminal case was resolved, Carr said.

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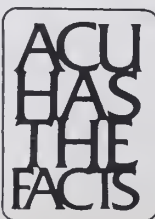
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Intel Files Trade Secrets Suit

(Continued from Page 63)

ager, Philip J. Salisbury, former engineering manager, and Maria Ligeti, former business analyst, according to James Jarrett, manager of corporate communications at Intel.

According to published reports, the four along with another man have formed Seeq, Inc., a Milpitas, Calif.-based company. Seeq has yet to begin manufacturing operations, nor have its founders said what products the company will produce. They reportedly are seeking funding in the venture capital market.

None of the principals of the new company could be reached for comment.

The trade secrets in question in the suit concern Intel's new 16K-byte electrically erasable programmable read-

only memory (E²prom) chip, Jarrett said.

"It will be the only one on the market that is electrically erasable, as opposed to those that are erasable only with ultraviolet light," he said.

"This means that erasure can take place from remote terminals and at one byte at a time," he added.

Jarrett said the suit asks specifically that the four do not use or disclose Intel's trade secrets, seeks to enjoin them from manufacturing any E²prom devices "for a reasonable period of time," requests the court prevent Seeq from hiring away Intel's technical personnel familiar with its new product development and asks that the four report to the court on a quarterly basis for two years so as to monitor their activities.

HP Eyeing Mainframe Manufacture in Mexico

By Kevin M. Kelleghan
Special to CW

MEXICO CITY — Hewlett-Packard Co. is studying the manufacture of computers in Mexico and may reach a decision by mid-year that would enable it to become the first mainframe producer in that country.

Burroughs Corp. and NCR Corp. are the only other U.S. computer manufacturers making products in Mexico, HP said. Burroughs is turning out disks there and NCR is making intelligent terminals and minicomputers.

"Hewlett-Packard is talking now to the Mexican government about manufacturing in Mexico," John A. Young, president and chief executive officer, told *Computerworld/Mexico*. "Mexico is a dynamic market and things are really jumping there. We would manufacture in Mexico because that govern-

ment wants Hewlett-Packard to do so. The project is currently under review."

Young said Mexico is "an important enough market for us that we would want free access to it" and added, "We are evaluating now and will know by summer if we will go ahead."

Evaluation is being carried out by Richard Love, director of International Manufacturing for HP in conversations with Nathan Warman at the Secretaria de Industria y Comercio. The company, which currently sells products shipped from the U.S., has set criteria for the manufacturing decision on factors such as the "availability of engineers and technicians," Love said.

"We can train the rest of the personnel. But we are not looking at Mexico

in terms of low labor costs. Mexico's an excellent growth market," he said.

"This is a long-term plan," Love pointed out. "We've found that in markets that are rapidly growing, we do better if we know the market."

Although the decision to manufacture could come this summer, there is no specific decision target date and plans could become firm sooner.

Love said a decision has not yet been reached on which products might be manufactured in Mexico because "we want to know first which products make sense." But another official said that the newly announced guarantee of 99% uptime would also apply to products sold in Mexico — and possibly those manufactured in the country — and that the guarantee could cover

Mexico as early as 1982.

Hewlett-Packard, with plants in 22 cities in the U.S. and in eight cities in other countries, has 172 sales offices in 65 countries. Sales for fiscal year 1980 were \$3.1 billion: Computer and calculator products accounted for 49% of 1980 sales. International customers account for about half of HP's business, which includes more than 4,500 different products.

Mexico was the fastest growing market in the world for Hewlett-Packard last year. The HP-installed base nearly doubled. Today the delay between introduction of new products in the U.S. and Mexico is now only two to three months."

Kelleghan is general manager of Computerworld/Mexico.

Datapoint, TRW Make Net Deal

SAN ANTONIO, Texas — Datapoint Corp. and TRW, Inc. have finalized an agreement on the purchase by Datapoint of TRW's international sales and distribution network for Datapoint products. Last September the two companies signed a letter of intent covering the proposed transaction.

It is expected that the aggregate cash price payable by Datapoint for the purchase of all TRW interests and local interests covered under the agreement will be approximately \$107 million. In addition, Datapoint said it will assume certain liabilities connected with such interests and will acquire certain Datapoint-manufactured assets and nominal non-Datapoint assets included in the distribution network for cash in an amount to be determined at the date of closing.

The agreement provides for Datapoint's purchase of TRW's net and some local interests in 10 distributorships in which TRW owns an equity interest and compensation to TRW for contract rights to market outside of the U.S. Separate agreements for each country are expected to be executed. Several of the acquisitions are subject to foreign government approval. The 10 distributorships are located in Australia, Austria, Brazil, Canada, France, The Netherlands, Spain, Switzerland, the UK and West Germany.

TRW, which has distributed Datapoint products internationally since 1970, will continue to represent other manufacturers.

Division to Offer WP Buyer Data

CHARLOTTE, N.C. — Martin Marketing is establishing a new division exclusively designed to furnish market-area information on word processing (WP) buyers.

The data compiled will include the recent purchasers, their locations and configuration of equipment purchased and will be compiled on a monthly basis. The data will pertain to all sections of the country.

The division will be located at the firm's Charlotte-based headquarters at 5700 Executive Center Drive, Charlotte, N.C. 28212.

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DG Reorganizes Business Into Three Divisions

(Continued from Page 63)
what we believe to be significant future opportunities for growth that may

exceed our past corporate performance," de Castro stated. The move is part of the company's long-range plan

for the decentralization of authority.

The formation of the three new divisions results in a total of nine profit centers that have been established within DG. However, aside from field engineering, most of the other profit centers are sales organizations.

Each of the new divisions is of equal importance and roughly equal in size. Although the firm has experienced a softening in OEM orders, a spokesman claimed the reorganization was not undertaken to stress end-user sales over OEM sales.

Staff Turnover

The company does not anticipate a large number of defections from either management or the sales staff because of the reorganization, a spokesman

said. In the past year DG has reportedly had a serious problem with turnover in its sales force when it assigned salespeople to specific product lines. Until that time the salespeople sold a variety of products.

The new divisions and the sales divisions will now report to Herbert J. Richman, who moves up to executive vice-president from his former position of senior vice-president of marketing.

ISD Target

The newly created ISD will target companies that have more than \$25 million in sales and 1,000 employees. The product focus for this division is distributed and stand-alone systems and scientific and commercial information processing systems, a spokesman said.

Current DG products addressing this market are the Eclipse and MV/8000 series, Advanced Operating (AOS) and AOS/VS-based systems and communications and network products.

DG sees major competition for this group coming from Tandem Computers, Inc., Hewlett-Packard Co., Digital Equipment Co., Wang Laboratories, Inc. and IBM's Data Processing Division.

Barry Fidelman, vice-president, will become general manager of this division. Fidelman previously served as vice-president of product marketing. Stephen J. Gaal, formerly vice-president of software development, is now vice-president of product development for ISD.

SBSD Focus

SBSD will focus on systems for smaller enterprises and lists its competition coming from Apple Computer, Inc., Basic Four Corp., Wang and IBM's General Systems Division.

Current DG products included in this divisional responsibility are the CS line, Cobol, Business Basic and micro-processor-based commercial systems. Lawrence Seligman, a vice-president formerly in charge of small business systems, is general manager of this division.

The third new entity, the TPD, will target technical OEMs, real-time and industrial systems builders and laboratories.

DG's line of Micronova, Nova and scientific Eclipse processors are the products encompassed by this division.

Vice-President Dr. Michael Schneider, formerly in charge of the Systems Division, becomes the general manager of TPD.

Hitachi Expands M Series

(Continued from Page 63)
are \$193,000 for the M-280H and \$48,000 for the M-204H.

Hitachi said it expects to sell 120 units of the M-280H and 500 units of the M-240H within the next four years.

Further information on these products is available from Hitachi Information Service, The Gray Consulting Group, Inc., 77 Water St., New York, N.Y. 10005.

DG Forms Group For Corporate R&D

WESTBORO, Mass. — In announcing its recent reorganization, Data General Corp. also established a corporate research and development (R&D) group.

Headed initially by President Edson de Castro, the new group has several functions. A primary responsibility will be to develop a baseline technology for a range of DG products.

Moreover, the group will develop peripherals — disk and tape drives, printers and terminals — to support the company's families of products. DG previously announced that it intends to heavily stress vertical integration.

Other purposes of the group are to provide unified semiconductor technologies for products and develop specific hardware under contract.

Computerworld's Special Report on March 30th, "Increasing People Productivity" will show MIS directors how to increase the productivity of personnel.

Edited by Bruce Hoard, this Special Report will show you how to boost your productivity with expert advice and actual user experiences about automated systems, editorial services and training programs. You'll read tutorial and application stories about:

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Reflected in Export Restrictions

U.S. Agencies Seen Ignorant of Microelectronics

By Jeffrey Beeler

- CW West Coast Bureau

SANTA CLARA, Calif. — U.S. federal agencies are largely "ignorant" of their own country's advanced microelectronics, and that shortcoming is clearly reflected in the government's current restrictions on high-technology exports to Eastern Europe, according to Applied Materials, Inc. executive Robert Graham.

"The U.S. government doesn't understand our electronics technology," Graham recently told an estimated 250 members of the Semiconductor Equipment and Materials Institute (Semi). "If an American company applied for a license to sell toggle switches to the eastern bloc countries and the application had the word *silicon* in it, the request would probably be turned down by the federal government."

Ironically, tight restrictions on U.S. high-technology exports have proved largely ineffective in denying the Soviet Union and other Eastern bloc nations access to state-of-the-art microelectronics. "Countries behind the Iron Curtain don't have to go to the U.S. for the best and the latest electronic hardware," the Applied Material marketing vice president said. "They can get the same equipment from Japan and Western Europe."

Speaking at a Feb. 19 Semi dinner meeting here, Graham urged U.S. vendors contemplating an assault on the Eastern block market not to bother. "Eastern Europe is a loser," he said. "If you try to do business there, you'll have to get involved in a lot of payoffs and deal with a lot of devious people. My advice is to stay away from that region of the world. You'll only be disappointed."

Prime Target

Western Europe, on the other hand, represents a prime target of opportunity for U.S. firms intent on expanding their sales into the international marketplace. "There's no way the Western European countries will ever become a major power in the semiconductor field," Graham said. "Over the years, they've proved they simply can't compete with their American and Japanese counterparts. So they're buying lots of high-technology equipment from abroad."

During the next few years, Western Europe is destined to become a major "battleground" for U.S. and Japanese high-technology suppliers, and the Japanese will prove formidable competitors indeed, Graham predicted. Only two years ago, none of Japan's semiconductor firms had established a presence in Western Europe. Since then, Japanese subsidiaries have sprouted all over the region.

Another prime target of overseas opportunity for U.S. electronics firms is Japan itself. But to succeed in that Far Eastern country, American corporations and their top-level management first have to understand the workings of the Japanese mind.

"The Japanese possess what could be called a 'win-win' psychology," Graham explained. "As long as you can contribute something worthwhile to a business relationship with the Japanese, they'll always make sure you win a little and they win a little. But the

moment they suspect you can no longer do them any good, they'll cut you off entirely and take their business elsewhere.

"They also attach a great deal of importance to historical and emotional relationships," he continued. "To do successful business in Japan, American managers have to establish a strong rapport with their Japanese partners. If the Japanese know and trust you well, chances are they'll buy from you."

Graham's remarks about the importance of understanding Japanese psychology underscored his broader premise that an American company's success in foreign markets depends to

a large extent on its ability to empathize with the indigenous population's thought processes. "People in other countries often don't think and conduct business in the same way we do," Graham told his audience. "If you don't play by the established rules of the game in an overseas market, you're going to be in real trouble."

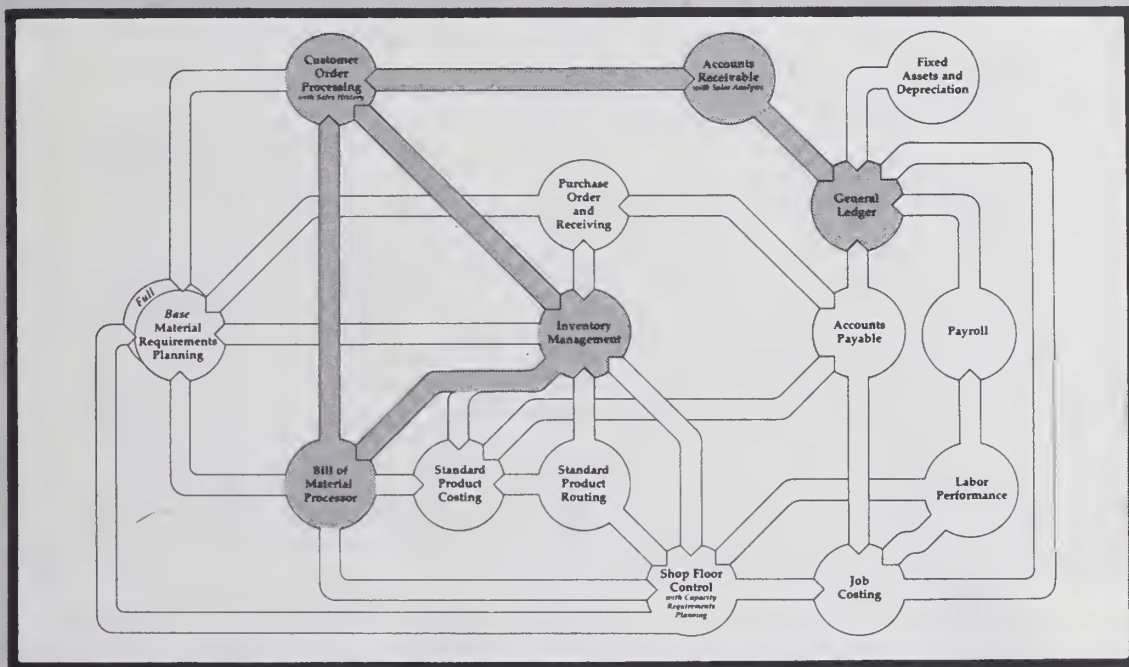
Customer Requirements

The Applied Materials marketing chief also reminded his listeners that foreign countries often have vastly different customer requirements from the U.S. and that American-made products and services have to be tailored accordingly to ensure overseas

acceptance. If a piece of U.S. high-technology gear is earmarked for sale to Western Europe, for example, the product had better conform to European voltage and frequency requirements, Graham said.

One of the most crucial customer requirements for a U.S. firm operating abroad is the need for prompt, effective service and support. "If you plan to go up against foreign competitors in their own markets, you have to commit to providing the same level of service you offer in the States," Graham said. "Don't even try to enter an overseas market if you're not prepared to fully support your product. You'll only get a black eye."

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Seminar to Cover Effects Of Japanese DP Invasion

NEW YORK — "The Japanese Invasion of the U.S. Computer Industry" is the title of The American Institute for Professional Education's one-day seminar to be held on April 7.

Conference topics will cover the development of a financial strategy with limited resources, the U.S. government's role in the market, the worldwide market, structuring an aggressive response to the Japanese threat, product plans and the convergence of the U.S. and Japanese industries.

Speakers at this event will include The Honorable James M. Shannon, Mass. Congressman; Dr. Mirek J. Stevenson, chairman of the board at Quantum Science Corp.; and C. Oakley Mertz, vice-president of vendor services of The Gartner Group.

Registration for the conference is \$295 per person.

Additional information can be obtained from sponsors at The American Institute for Professional Education, Carnegie Building, Hillcrest Road, Madison, N.J. 07940.

Foreign Orders & Installations

Lagoven, an affiliate of Petroleos de Venezuela, has awarded Modular Computer Systems, Inc. a \$400,000 order for an analytical laboratory computer system.

Wardair, a Canadian charter airline, has placed a \$4 million order with Sperry Univac for a system to handle reservations and other passenger services.

The Spanish National Institute for Employment in Madrid has contracted for a \$2.8 million Sperry Univac 1100/62 system; the Swedish State Power Board has ordered approximately \$9.5 million worth of Univac large-scale systems; and the city of Westminster, UK, plans to install Univac 1100/61 systems, valued at \$1.8 million.

The company responsible for developing nuclear energy in Canada, Atomic Energy of

Canada Ltd. Engineering Co., recently moved into remote batch and distributed data processing applications by leasing a 1660 DDP system and 1620 and 1630 remote batch terminals from Harris Corp.'s Data Communications Division. The three-year lease came to \$700,000.

Computer Sciences Corp.'s UK subsidiary has received a contract valued at \$3.6 million from a Swiss consortium for technical support in the development of a national telecommunications network.

Policy Management Systems, Inc.'s marketing division has sold its insurance software systems to Zwolsche Algemeene Schadeverzekering in Utrecht, the Netherlands.

Northern Telecom, Inc. has received a \$1.4 million order from British Columbia Systems Corp. for Model 405 and

445 distributed data processing systems.

Scientific Atlanta, Inc. has received several new orders from the People's Republic of China that bring its 1980 business in that nation to over \$1 million. The instrument group has also received a \$262,000 order from the government of India for test and control equipment to be used in that country's space and satellite activity.

Nigerian Airways has placed an order for approximately \$257,000 of advanced Racal-Milgo Corp. data communications products.

Rank Hovis Ltd., a U.K. food processor, has purchased 14 Computer Automation, Inc. Syfa network processing systems, valued at over \$2.6 million, in a move to develop an interactive distributed processing network.

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Mergers & Acquisitions

Anacomp, Inc. has completed the acquisition of Micro/Land Corp. of Cincinnati, along with certain assets of General Computing Corp. of New York.

Datapoint Corp. has announced the acquisition of DP Computers A/S of Copenhagen, Denmark, in exchange for an undisclosed amount of Datapoint common stock.

Apple Computer, Inc. has concluded an agreement to acquire Microsense Computer Ltd. of London, England.

Haney & Associates has recently taken over the operations of J.L. Greene Associates, management consultants in professional recruitment.

Wespercorp has completed its acquisition of Datasystems Corp. in exchange for 128,222 shares of Wespercorp stock.

Plantronics, Inc. has announced plans to sell its subsidiary, Action Communication Systems, Inc., to Honeywell, Inc. for an undisclosed cash amount.

Four-Phase Systems, Inc. has acquired Two Pi Corp., a

wholly owned subsidiary of Signetics Corp.

Xerox Corp. has purchased the assets of Praxa Corp. Details of the agreement were not disclosed.

Scan-Data Corp. has acquired Document Systems, Inc. for 321,000 shares of common stock.

CGA Computer Associates, Inc. has signed an agreement to acquire a privately owned software company called Allen Services Corp. for approximately \$16 million of CGA common stock.

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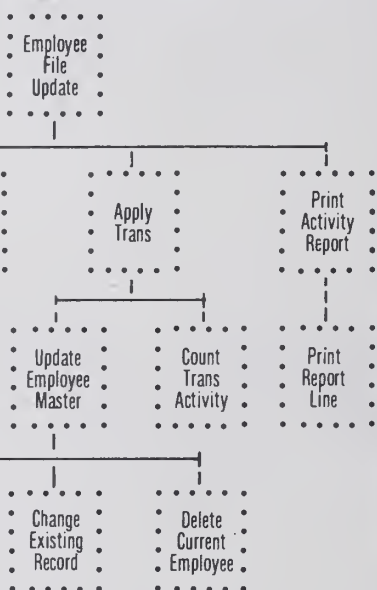
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New Companies

Technologists from four computer companies have formed Rotating Memory Systems, Inc. This company is developing a family of low-cost hard disk drives for use in OEM computer-based systems. The founders are Joseph Tung, formerly of IBM, Jack Swartz, from Shugart Associates and IBM; John Shortal of Computhink, Inc. and Ramtek Corp.; and finally Mike Kirby, who worked previously for Shugart, Ball Computer Products, Inc., Ampex Corp. and Calcomp.

The founders played key roles in the development of Winchester hard disk technology, including creation of such products as the IBM 3340, 3344, 3350, 3310, 3370 and 62GV. With more than 40 years of cumulative experience, they are responsible for numerous patents and design

ideas that have since become industry standards.

Rotating Memory Systems offers a line of 5.25-in. Winchester disk drives with capacities of 3.18-, 6.36- and 12.72M byte (unformatted).

The new company is headquartered at 1031 A East Duane, Sunnyvale, Calif. 94086.

K. Woodrow Benckert, a former ITT executive, has opened a new Washington-based communications counseling firm bearing his own name. The outfit will specialize in aiding established and new enterprises plan and pursue their telecommunications and information-related business objectives. Benckert's offices are located at Suite 200, 2000 L St., NW, Washington, D.C. 20036.

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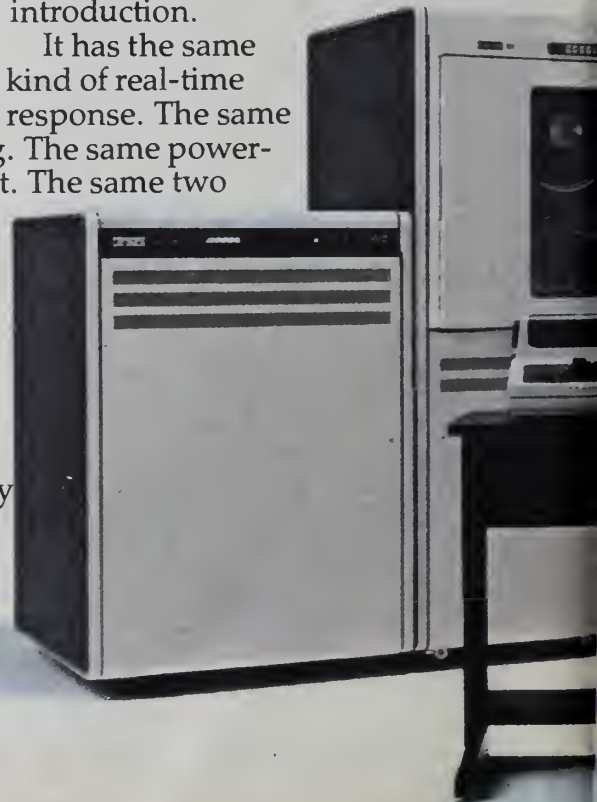
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Sorbus Opens Repair Shops

FRAZER, Pa. — The Sorbus Service Division of Management Assistance, Inc. has opened a chain of terminal service centers.

Users can bring terminals to any of 50 centers throughout the country and have them repaired in five to 10 days. The Sorbus program is offered without a contract, so users do not have to enter a long-term agreement with the firm, Sorbus said.

The Sorbus centers will specialize in repairing Diablo Systems, Inc. Printer 1600 series terminals, all Qune Sprint 5 series terminals and Lear Siegler, Inc. ADM-1, ADM-1A, ADM-2, ADM-3, ADM-3A, ADM-31 and ADM-42 terminals, the vendor said from 50 E. Swedesford Road, Frazer, Pa. 19355.

Executive Corner

- Kenneth Fox has been appointed vice-president of research and development for ASK Computer Systems, Inc.

- John Verroen has joined Century Data Systems, Inc. as that company's vice-president of finance.

- Delphi Communications Corp., an Exxon Communications Systems Co., has announced that Fred Braddock has been promoted to vice-president, product development.

- Donald M. Heath has been promoted to vice-president of operations at Tymnet, Inc.

- Neal Dempsey III has been named vice-president of marketing for Harris Corp.'s Data Communications Division.

- Vicky McManus has been promoted

to vice-president of Certified Resource Corp., a Dallas-based DP consulting firm, and Rod Welch has recently joined that company as sales and marketing manager.

- Alpha Micro, Inc. has named Lloyd M. Lokka to the newly created position of vice-president, marketing.

- Steven C. Burke has been named vice-president of finance at Lear Siegler, Inc.'s Data Products Division.

- Dr. Joseph F. Shea has been named senior vice-president, engineering for Raytheon Co.

- Data Terminal Systems, Inc. has announced the election of J. Robert Schiller as vice-president, major account sales, and David M. Carlson as vice-president, food industry systems.

- C. Gerald Diamond has been appointed

vice-president of Personal Software, Inc.

- Ira A. Apatoff has been appointed vice-president, financial products at STSC, Inc.

- Anthony Passaro was recently named vice-president of field engineering, and James Jecker was named director of marketing at Micom Data Systems, Inc.

- Max Faircloth has been named vice-president and senior systems analyst at Encore Lodging Systems.

- Richard Taylor has been appointed vice-president of sales at Nixdorf Computer Corp.

- John P. White, former Assistant Secretary of Defense in the Carter Administration, has been appointed chairman of the board of Interactive Systems Corp.

- Howard F. Earhart has been named president and chief operating officer of Information Magnetics Corp., a subsidiary of Computer and Communications Technology Corp. (CCT). He was also appointed a vice-president of CCT.

- The election of Dr. Lawrence G. Roberts as president of the newly formed Subscriber Network Products division of GTE Communications Products was announced recently.

- John Hillegass, one of the founders of Datapro Research Corp., was elected chairman and chief executive officer of Symcro Systems, Inc.

- Leonard C. Anderson has been named president of Nixdorf Computer Software Co., the software subsidiary of Nixdorf Computer Corp.

- Scan-Data Corp. has announced the promotion of Michael Sikalis to vice-president of the Federal Systems Division.

- Dr. Raymond Wang was elected vice-president for microprocessors, memory and communications products at American Microsystems, Inc. William D. Baker was also elected vice-president of the manufacturing facility of the company and Barry Carrington was elected senior vice-president.

- Kenneth Halverson Jr. has been named vice-president and general manager of the newly-formed F/S Vendor Lease Corp., a division of the FSC Corp.

- Mike O'Neal has been appointed vice-president of marketing and sales, a newly established post at Micro Power Systems, Inc.

- Bill Schoonmaker has been named vice-president in charge of marketing and quality control at Brandon Systems Institute.

- Robert Lundstedt has recently been appointed vice-president of manufacturing at Infotron Systems Corp.

This advertisement is neither an offer to sell nor a solicitation of an offer to buy any of these securities. The offering is made only by the Prospectus.

February 19, 1981

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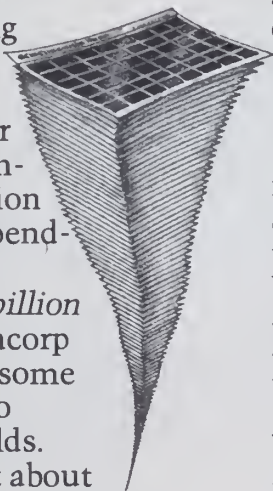
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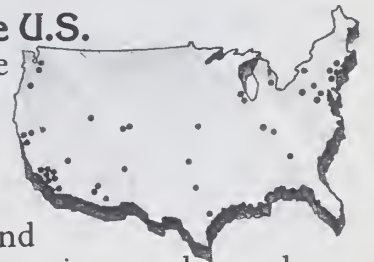
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Nickels & Dimes

Beehive International, Inc. has signed an unsecured \$6 million line of credit agreement with Continental Illinois National Bank & Trust Co. of Chicago.

\$\$\$

The board of directors at **Computer Terminal Systems, Inc.** has declared a three-for-two split of the corporation's common stock, which will be effective in a 150% stock divi-

dend, to be distributed March 16 to stockholders of record Feb. 27.

\$\$\$

The **American Stock Exchange** has approved for original listing 1,737,689 common shares of **T-Bar, Inc.**

\$\$\$

Computer Sciences Corp. expects net earnings for the fiscal second half ending April 3

will be lower than in the first half, due to a continuation of lower margins in its data services operations and a reduction in margins in contract service operations.

\$\$\$

Advanced Electronics Design, Inc. has signed investment agreements with TA Associates of Boston and Brentwood Associates of Los Angeles to secure \$2.2 million

for the expansion of its sales over the next two years.

\$\$\$

Scientific-Atlanta, Inc. has reported record orders and an

all-time high backlog as of Dec. 31. The second quarter figures showed a 74% increase over the same period one year before, with orders estimated at \$90 million.

Supershorts

Image Resource Corp. has entered into an agreement with **Intelligent Systems Corp.**

to sell their products jointly as business graphics systems.

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The 25,000th Hewlett-Packard Co. 9825 Desktop Computer rolled off the production line recently, marking a milestone for that company achieved by few computer manufacturers.

MSI Data Corp. has established a "Direct Store Delivery" program to develop and supply new portable data entry systems for retail use.

AM Jacquard Systems, a division of AM International, Inc., has recently reduced its national workforce by approximately 80 employees.

In its first step to double its sales force by the end of 1981, BTI Computer Systems of Sunnyvale, Calif., has recently opened four new offices.

Control Data Corp. plans to install two of the world's most powerful supercomputers in its Cybernet services network. Designed to enhance services to users of the currently installed Cyber 203, this new supercenter will offer 2 million, 64-bit words of real memory and 2 trillion words of virtual memory in each Cyber 205.

Statistical Tabulating Corp. has announced the formation of a new division, the Computer Service Bureau. The new division will provide hardware to interface with its computers and the customer through its OEM arrangement.

Xylogics, Inc. has announced plans for expansion into the minicomputer, microcomputer packaged systems market.

Comshare, Inc. has obtained a consent judgment in the U.S. District Court, District of Vermont, enjoining a company in that state from the use of the Comshare name.

Aregon of London has launched a Prestel-compatible videotex bureau in Anaheim, Calif., reportedly the first such bureau in the U.S.

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Orders & Installations

Robinson Nugent, Inc. has ordered a Honeywell, Inc. DPS 8/20 large-scale computer and the Honeywell Manufacturing System software.

University Savings Association of Houston has ordered 30 Total Teller 2300 automated teller machines from Docutel Corp.

Northwestern Bell Telephone Co. of Omaha, Neb., has installed three tri-processor Honeywell, Inc. DPS 8/70 large-scale computer systems plus associated software and equipment valued at \$12.9 million.

The Board of Education of Flint, Mich., has ordered a Sperry Univac 1100/61 processor.

Waste Management, Inc. of Oak Brook, Ill., has ordered an Attached Resource Computer System and 33 Datashare Systems from Datapoint Corp.

The Kenneth O. Lester Co., of Lebanon, Tenn., has ordered a System 80 computer system from Sperry Univac.

Parker Drilling Co. of Tulsa, Okla., has ordered the Corporate Financial System, a computerized financial management package from American Management Systems, Inc.

J.B. Ivey of Charlotte, N.C., has ordered a Sperry Univac 1100/60 system valued at \$1.7 million.

Integral Systems, Inc. has contracted

to provide the ISI Payroll/Personnel System to the Central Data Processing Authority of the State of Mississippi.

John Deere Insurance Co. has signed a contract with Policy Management Systems (PMS), a division of Seibels, Bruce & Co., for the entire PMS Series II family of systems.

National Data Corp. has been awarded a potential \$7.5 million contract from the U.S. Department of Defense, for the installation of Datastat pharmacy systems in 15 major military hospital sites.

RCA American Communications, Inc. has received a National Aeronautics and Space Administration contract

to provide space shuttle communications services into the Marshall Space Flight Center, Huntsville, Ala.

Genasys International, Inc. has announced that its affiliate, Generation Sciences, Inc. has received a \$220,000 contract from the General Services Administration to provide the government agency with Genasys software and support services.

Datrol, Inc. has been awarded a contract from American Express Co. for an additional 2,000 FT-3202 computerized merchant-activated credit authorization terminals.

Allstate Insurance Co. has signed a multiyear contract to have Automatic Data Processing, Inc.'s Audatex collision estimating system installed in its district claim offices.

Physicians Mutual Insurance Co. has installed five Checkmate units, a stand-alone remittance processing system made by Charter Data Products, Inc.

Recent orders at Scientific Atlanta, Inc. include a \$10 million contract for its cable-tv products from Cox Cable Communications, Inc., a \$500,000 order from Commonwealth Edison Co. for an advanced computer-controlled monitoring system and an order from Warner Cable Corp. and Warner Amex Cable Communications Co. for equipment for the cable television industry's largest head-end installation.

Microdata Corp. has sold three of its top-of-the-line Reality Series 8000 computer systems to Fasco Industries, Inc.

C3, Inc. has announced the receipt of a \$35 million contract from the U.S. Navy for minicomputer systems for factory source data collection.

The software division of Olamic Systems Corp. has announced that 3M Corp. had become the first Fortune 50 company licensed to use the Demand 91 video data management system.

Contracts

Finserv Computer Corp. has announced the finalization of a \$1.3 million contract agreement with American Maize-Products Co. of Danbury, Conn. The contract calls for the Epic Building Materials Management System supported by 13 Data General Corp. point-of-sale computers at all of American Maize's 44 retail outlets.

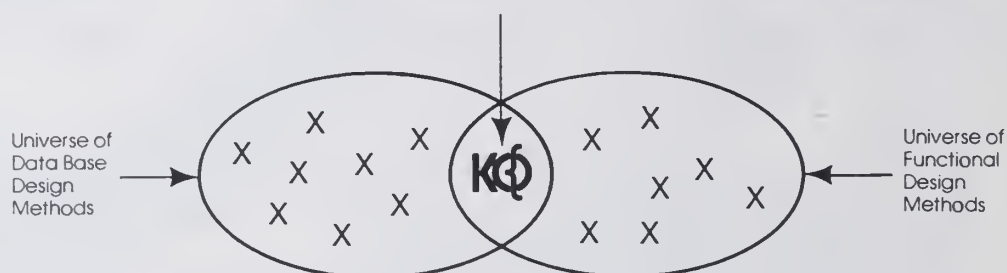
Computer Automation, Inc. has signed a \$4 million contract with Docutel Corp. to supply the latter with advanced processors over the next two years.

Searchfast Systems Ltd. has awarded Datacrown, Inc. a five-year contract to provide information processing and specialized marketing services.

Bergen Evening Record Corp., publisher of New Jersey's evening daily newspaper, and AM ECRM have entered into a joint venture to develop a sophisticated business/circulation control system.

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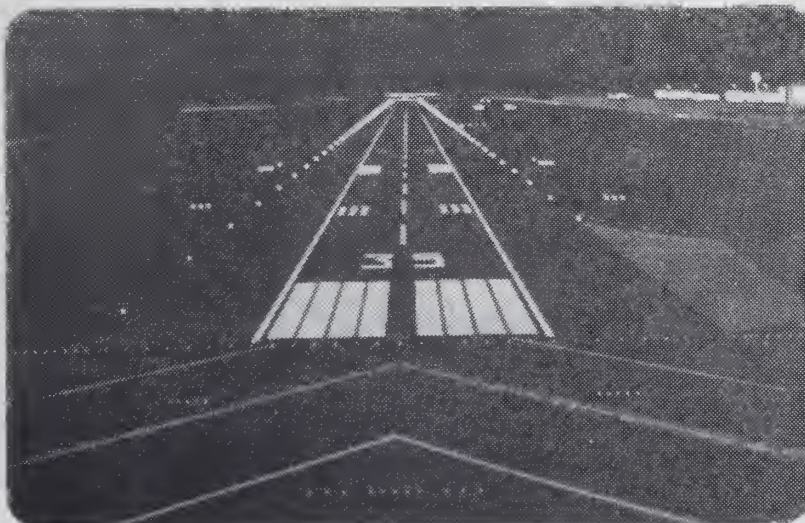
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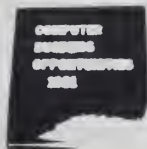
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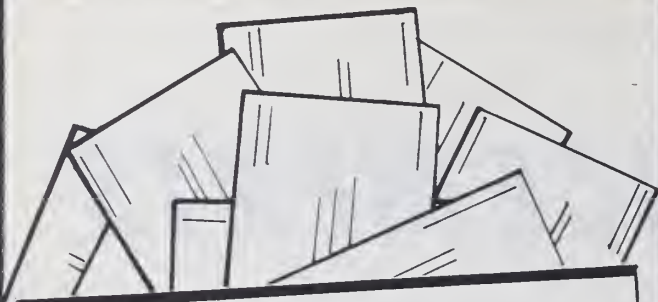
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Pat Eastlake
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Another computer scientist is needed with a strong background in data base management systems or other systems implementation to work with state-of-the-art data management software for scientific applications. Future FRAMIS development activities possibly include design of software for distributed data bases in our network environment, design of an interface between data management and graphics software or development of software to handle data assertions.

If you have skills to offer in the above areas, or computer experience that may match our wide range of other career opportunities, please send your resume and salary history and requirements to Sue Porter, Employment Division, Lawrence Livermore National Laboratory, P.O. Box 808, L-425, Dept. KCW-031, Livermore, CA 94550. U.S. citizenship is required. We are an equal opportunity employer.

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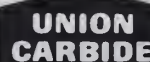
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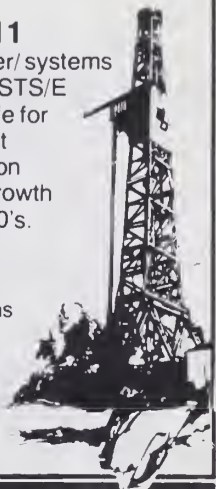
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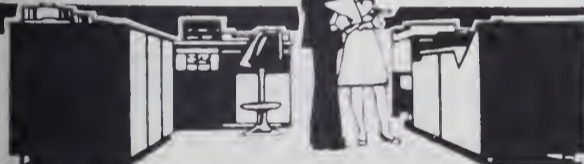
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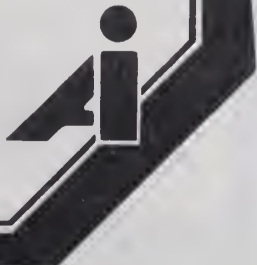
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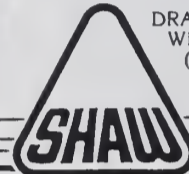
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*** CAREER FULFILLMENT:**
Your career is treated with strictest respect and confidence. Frankly speaking, we do not work with many companies that request our services strictly due to their poor working conditions or lack of opportunity.

*** SYSTEMS ANALYST:**
Two of our blue chip clients are expanding. They both are very challenging companies with excellent reputations. You will find an atmosphere that welcomes new ideas and rewards accomplishment. (State of the art hardware and software.)

***PROGRAMMER/ANALYSTS:**
IBM, UNIVAC, or DATA GENERAL. Experienced in any of the following: COBOL, BAL, IMS, TSO, CICS, DOS, OS, MVS, FORTRAN, PL/I, DATA BASE, and ON LINE.

***SYSTEMS PROGRAMMERS:**
Exceptional opportunity and challenge. MVS, IMS, VM, TCAM, VTAM, DOS, or COMMUNICATIONS... Our clients offer any needed training.

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Send resume or
phone 918/481-0423

Confidential Search

8117 S. Harvard
Tulsa, OK 74138

DATA BASE ANALYST

An outstanding opportunity exists with one of Denver's most dynamic data processing service companies. We are seeking an individual with a solid background in a multi-IBM environment. TOTOL and/or VSAM experience desired. Project management experience also helpful. Need ambitious team-worker with good oral and written communication skills for this highly visible position. Excellent pay and benefit package including profit sharing and employee stock purchase plan. Qualified candidates please call Myron Treber at (303) 893-3533 or send resume to:

BALDWIN DATA SERVICES
A Division of Baldwin United
1425 Arapahoe Street
Denver, CO 80202
Equal Opportunity Employer

CONNECTICUT FIRM SENIOR SYSTEMS ANALYST

Oldest independent DP Service Bureau in Connecticut seeking person with 3+ years experience in all phases of systems design. Person will play key role in company's future development plans. Emphasis on business financial applications. Data Base experience a plus. Send resume, salary requirements to Personnel Manager.

APPLIEDATA
33 Bernhard Road
North Haven, CT 06473

Sales Representatives for the Netherlands

Computer Associates Products Nederland B.V., een dochteronderneming van Trans American Computer Associates Inc., een internationale company op het gebied van IBM compatibel software ontwikkeling en verkoop met vestigingen over de gehele wereld, zoekt voor haar kantoren in Brussel en Gouda enthousiaste.

SOFTWARE - VERKOPERS (M/F)

die belast zullen gaan worden met het onderhouden van contacten met bestaande relaties als wel verantwoordelijk gesteld worden voor de verkoop van onze systeem software producten CA-SORT, CA-DYNAM, CA-JASPER+, CA-DRIVER, CA-SOLVE etc. in resp. het Vlaams sprekende gedeelte van België en in Nederland.

Voor deze zelfstandige en verantwoordelijke functie gaan onze gedachten uit naar een a.s. collega die aan onderstaande voorwaarden kan voldoen:

- Ruime kennis van IBM DOS besturingssystemen (van OS is een pre)
- Enige jaren verkoopervaring
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De honorering is in overeenstemming met de waarde welke wij aan deze functie hechten. Naast een vast salaris met uitstekende commissieregeling, bieden wij prima secundaire arbeidsvoorwaarden.

Indien U belangstelling heeft voor deze functie, kunt U zich voor nadere informatie wenden tot de heer Charles B. Wang of in het Engels Uw schriftelijke sollicitatie (resumé), onder vermelding van "software-verkoper België/Holland", richten aan:

COMPUTER ASSOCIATES

Trans American Computer Associates Inc.
125 Jericho Turnpike
Jericho, NY 11753
U.S.A.
Tel.: (516) 333-6700

SYSTEMS ANALYST (Senior MIS Specialist)

- Define user needs from design to implementation
- Provide technical aid to user, staff and management
- On-line terminal interfaces with PDP 11-70
- Prefer 5 years' experience minimum combination of academic/work experience
- Small, flexible MIS staff
- Typical business and unique applications
- Non-typical flexible public agency

Salary: \$21,019 per year. Deadline for applications is March 9, 1981.

Please respond in writing to:



Personnel Department
BOSTON HOUSING AUTHORITY
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COMPUTERWORLD CLASSIFIEDS WORK!

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It's easy to advertise in COMPUTERWORLD. If you don't have an advertising agency to supply us with copy, layout and order, or a camera ready mechanical, stat or film negative of your ad, just call Sue Stevens at 1-800-343-6474. She will be glad to take your ad and typeset it in available fonts at no extra charge. If you have lengthy ads that require logos and artwork, just send a clean typewritten copy of your ad to the classified advertising department at COMPUTERWORLD (telecopier service is available); note the ad size you want; and, if you want your company logo to appear in your ad, please be sure to include a camera-ready copy with your insertion order. You should also supply any special borders, headlines and artwork that you want in your ad. Our Art Department will follow your suggested layout as closely as possible if you wish to send one.

**Ad closing is every Friday,
6 working days prior to issue date.**

Rates: Open rate is \$84.70 per column inch. Columns are 2" wide. Minimum ad size is 2 column inches (1 column wide by 2 inches deep), and costs \$169.40 per insertion. Additional space is available in half-inch increments. Some sample sizes and costs are shown.

- 1 col x 4" - 338.00
- 2 cols x 4" - 677.60
- 2 cols x 5" - 847.00
- 2 cols x 8" - 1355.20

Discounts are available when you run more than 35 column inches of advertising in a year anywhere in Computerworld. Box Numbers are available. \$10 per insertion. Ad Closing is every Friday, 6 working days prior to issue date (issues are dated Monday).

To reserve space for your ad, or if you'd like more information on Classified advertising in COMPUTERWORLD, call our office nearest you.

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- Chicago - (312) 827-4433
- San Francisco - (415) 421-7330
- Los Angeles - (213) 450-7181
- TELECOPIER SERVICE - (617) 879-0700

William J. Mills, Manager Classified Advertising



COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Opportunity with a Lifestyle to Match...

That's what the Morrison-Knudsen Company has to offer. Morrison-Knudsen is a world leader in the engineering/construction industry with headquarters in Boise, Idaho. M-K offers exceptional opportunities to combine professional growth with a personally satisfying lifestyle.

Boise offers unparalleled recreation—with boating, hunting, hiking, fishing and skiing all nearby, and a mild, four-seasoned climate for year-round enjoyment.

Continued and dramatic growth in our Data Processing operations has created a need for the following types of professionals:

Support Analysts

Candidate should have several years of commercial or engineering applications programming experience and systems design experience. Responsibilities would include systems analysis, installation and support for home office 370/158, 4341, WANG and other project mini-computers. Knowledge of any one or all of the following: FORTRAN, COBOL, BASIC, PL-1, VM/CMS, MVS, OS.

Application Programmers

Candidates should have several years of commercial applications programming experience with a working knowledge of data base or on-line systems along with experience in OS, JCL and COBOL. Mark IV experience is also desirable.

Scheduling Support Analysts

Candidates should have knowledge of the above computer systems, operating systems and languages. Candidates will provide in-depth user support for the following project scheduling tools, to include: PMS IV, PREMIS, ARTEMIS, CM4 and EZPERT. A comprehensive knowledge of scheduling is required.

Systems Analyst (Scientific Computing)

Development and implementation of scientific systems in areas of geologic exploration, conventional and geostatistical reserve evaluation, mine design, mine simulation and geophysics. Must have BS or MS in Computer Science, Operations Research, Engineering or Geophysics. Must have 3-5 years' experience with digital equipment.

It all adds up to the professional who wants to match an expanding career with an expansive lifestyle. Morrison-Knudsen offers outstanding career growth along with excellent salaries and benefits. Interested applicants can call **David Bates TOLL FREE at**

800-635-5000

or send your resume to David's attention at:

**Morrison-Knudsen Company, Inc.
Box 7808
TAD 0611
Boise, Idaho 83729**



MORRISON KNUDSEN

Engineers, Builders, Developers, Managers,
Equal Opportunity Employers, M/F/H



COMPUTER SYSTEMS ANALYST

Do you have considerable knowledge of computer systems analysis and design? Have you successfully demonstrated your ability in designing and implementing an automated budget/financial control and accounting system? Do you have demonstrated skills in conducting difficult studies of feasibility and systems design?

If your answer is yes to these questions and you're looking for new experiences in a growing DP Center utilizing distributive processing and RJE network, then you're the type of candidate we are seeking.

Our ideal candidate will be a degreed individual with an educational concentration in information systems, financial management, or business administration with DP experience in either the public or private sector.

Salary range \$19,170 - \$26,190. Complete state benefits package. **Submit state application by 5:00 p.m., February 16, 1981.**

Personnel Office
Department of Planning & Budget
P.O. Box 1422
Richmond, Virginia 23211
An EEO/AA Employer M/F/H/C

EDP AUDITOR

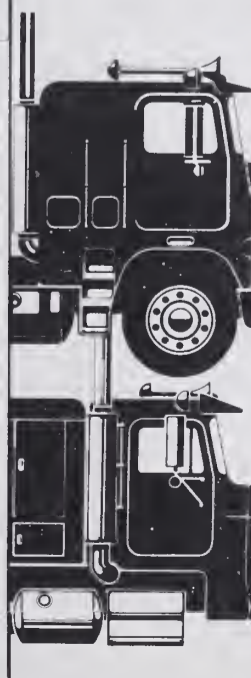
Major oil co seeks an indi with 2 yrs appli and systs audt exp. System envir is large IBM DOS/VSE. COBOL a must. Exel co bene. \$23K.



ROBERT HALF
DF OKLAHOMA
5840 S. Memorial Drive, Ste. 217
Tulsa, Oklahoma 74145
(918) 827-1600



FREIGHTLINER CORPORATION



Data Base Analyst

Portland, Oregon

Freightliner Corporation, major manufacturer of custom built class 8 diesel trucks, has an immediate opportunity for an experienced Data Base Analyst. The successful candidate will assume non-routine and challenging responsibilities serving as a consultant to applications personnel, during the design, coding, testing and implementation of data base applications.

Qualified applicants will have 5 years' data processing and 2 years' IMS, DB/DC experience, ability to code IMS blocks and strong communication skills. Freightliner offers excellent benefits and salary commensurate with experience and education, plus the opportunity to live and work in the great Pacific Northwest.

Qualified DBA's interested in a creative, positive working environment should send resume and salary history to **Paul Fulton, Freightliner Corporation, P.O. Box 3849, Portland, Oregon 97208.**

We are an equal opportunity employer m/f/hc.

Freightliner The Efficient Machine

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The San Francisco Bay Area

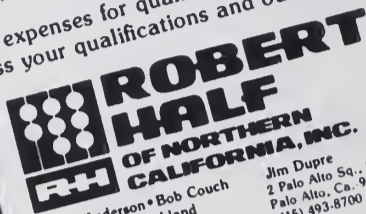
We've got it surrounded...
Multiple offices give you
Multiple Opportunities.

If you're a professional, use a professional in your search, it works.

BASIC PROGRAMMERS. An immediate need exists for programmers on a wide range of hardware if you have one or more year's experience. Do yourself a favor and investigate the many opportunities that await you in beautiful Northern California.

RPG II PROGRAMMERS. Put your talent to work. We're looking for highly motivated programmers with at least one year's experience to design and implement various business applications.

Our clients continue to pay interview and relocation expenses for qualified applicants. All fees assumed by clients. Call us collect today and discuss your qualifications and our opportunities.



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Linda Strickland
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Jim Dupre
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Palo Alto, Ca. 94304
(415) 493-8700
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(408) 293-9040

The Pacific Northwest And FPS— An Unbeatable Combination

The Location: We are within a one hour drive of Pacific Ocean beaches or skiing on Mt. Hood. Breathe the pollution-free air of the Pacific Northwest.

The Company: Floating Point Systems is a computer industry leader in the array processor field—a fast growing company because of our innovative products. Currently, we are looking for qualified professionals in the following areas:

Operating System Design Engineers

You will work in a team effort to define and implement a new high-performance operating system. BS or equivalent is required.

Compiler Design Engineers

Position responsibilities include the design, implementation, maintenance and documentation of compilers. A BS or the equivalent is required; compiler experience is preferred.

Software Development Engineers

You will design, develop and maintain software for our 38 bit array processors. Experience in minicomputer operating systems and J/O drivers is desired. BS or equivalent is required.

For immediate consideration, please call **COLLECT, (503) 641-3151, ext. 154**, or send resume and salary history to **Robert Clay, Floating Point Systems, Inc., P.O. Box 23489 CW04, Portland, Oregon 97223**. An equal opportunity employer m/f/h.



COMPUTING SCIENCE FACULTY POSITION

Trinity University
San Antonio, Texas

Tenure track position at the rank of Assistant Professor of Computing and Information Sciences. Ph.D. in Computer Science or equivalent required. Starting date is August, 1981. Salary is commensurate with background and experience. Will teach (9-10 semester hours) of computer science courses from freshman through master's level courses (usually one, three hour graduate course per semester), some research, advise students, and serve on departmental and university committees.

Department currently consists of five full-time faculty and some part-time lecturers; offers the BS and MS degrees; has 60-70 undergraduate majors and about 30 graduate students; was founded in 1969 and supplies all of Trinity's service course work in computer science in addition to the major programs. Computing facilities include: IBM 3031 with 4096K, 3 B char disk storage, more than 40 timesharing terminals devoted to faculty and student use, several minicomputers, a microcomputer laboratory, and a graphics laboratory.

University was founded in 1869, and is now located on a beautiful 100 acre campus in San Antonio. Enrollment is approximately 2958 students. San Antonio is widely recognized as one of America's unique cities. Population is approximately one million persons. San Antonio has a warm climate and is noted for its scenic beauty, places of historical interest and diverse cultural influence.

Send resume and letters of recommendation to: **John E. Howland, Chairman, Department of Computing and Information Sciences, 715 Stadium Drive, San Antonio, Texas 78284**. An equal opportunity employer.

LEAD PROGRAMMER

2 years experience or 2 years in Programming. Bachelor's Degree in Computer Science, Math or Management. Must have knowledge of COBOL and ASSEMBLER. Design & implement computer systems related to financial institutions. Consults with managerial & programming personnel to clarify program intent. Divides up program assignments. Analyzes test runs and directs any necessary corrections. Also reviews programs to increase efficiency and conserve storage space. \$550.00 per week to work 35 hours/5 days/week. **PLEASE SEND RESUME TO: Acsis, Inc., 120 Broadway, New York, N.Y. 10005.**

PHILADELPHIA PROGRAMMER TO 25K

Mid-Bucks/Jersey. Growing Ins Co raqs indiv w/1 yr exp in ASSEMBLER & MACRO LEVEL CICS. Qualified candidates will be able to READ & ANALYZE CICS DUMPS. Excel Benefits. Secura. IMMED INTV.

CONTACT: Bob Greenberg



2000 Market St., Suite 706
Philadelphia, PA 19103
(215) 568-4580

WANTED:

We started with a good idea 6 years ago to manufacture a quality matrix line printer, and a growth rate of nearly 4000% attests to the success of our product as well as the dedicated team of people who make it happen. If you're searching for a company where your efforts will be recognized and rewarded, investigate our current openings.

SENIOR SYSTEMS ANALYST

- Analyze, design and implement systems (mechanical, manual or automated)
- 10 years informations systems experience in manufacturing applications design; must have on-line development experience
- Bachelor's degree, preferably in computer science
- AIPICS certification, knowledge of data base concepts, COBOL and Business Basic, and Data General hardware utilizing AOS/INFOS would be pluses.

PROGRAMMER

- Translate design specs into computer programs instructions and debugging
- Prepare systems test data and program documentation
- 1 1/2 years programming experience in Business Basic and COBOL
- HS grad or equivalent with some college and technical training
- Additional pluses: Degree in Business, knowledge of RPGII, manufacturing applications, Data General hardware (AOS/INFOS)

As the fastest growing company in Orange County, we can offer you an excellent salary and benefit package and uncommon career opportunities. To explore your potential, direct your resume to the address below, or call **PAM TARANTINE COLLECT at 714/549-8839**.

To learn more about PRINTRONIX and our benefits package, call our 24-hour recorded **INFORMATION LINE at 714/546-3886**.

17421 Derian Ave., Irvine, CA 92714

Equal Opportunity Employer M/F

PRINTRONIX

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Issue Date: Ad closing is every Friday, 10 days prior to issue date.

Sections: Please be sure to specify the section you want: Time and Services, Software for Sale, Position Announcements and Buy/Sell/Swap. (Available upon request: Software Wanted, Turn-key Systems and Real Estate.)

Copy: We'll typeset your ad at no extra charge. Please attach CLEAN typewritten copy. Figure about 25 words to a column inch, not including headlines.

Cost: Our rates are \$84.70 per column inch. (A column is 2" wide.) Minimum size is two column inches (2" wide by 2" deep) and costs \$169.40 per insertion. Extra space is available in half-inch increments and costs \$42.35. Box numbers are \$10.00 extra.

Billing: If you're a first-time advertiser, (or if you have not established an account with us), WE MUST HAVE YOUR PAYMENT IN ADVANCE.

Ad size desired: _____ columns wide by _____ inches deep.

Issue Date(s): _____

Section: _____

Signature: _____

Name: _____

Company: _____ Title: _____

Address: _____

Telephone: _____

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CLASSIFIED ADVERTISING, COMPUTERWORLD
375 Cochituate Road, Route 30, Framingham, MA 01701

Success has many directions for a...

FIELD ENGINEER with PDP-11 Experience

at Control Data

Join one of the world's largest computer maintenance teams — and enjoy living in the sunny South as well.

Control Data Corporation is seeking a field engineer experienced in PDP-11 maintenance. Additional experience in 32/75 maintenance would be helpful.

CDC offers competitive salaries, a wide range of benefits, and relocation assistance.

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Programmer

Real-time Software Designers

Come to the sunny San Francisco Peninsula!

GTE Sylvania, Mountain View, California is designing a software intensive electronic intelligence system (ELINT) whose functions are distributed across multiple 32-bit processors.

These are immediate career opportunities for real-time software experts who can:

- * focus their natural creativity and intelligence to establish a coherent specification and design for an entirely new system;
- * thrive in an environment that stresses up-front documentation and top-down structured design;
- * utilize a personal terminal and associated software development tools to achieve a high degree of efficiency in the specification, design, and implementation activities;
- * technically contribute in one or more of the following fields:
 - * data base design and facilities,
 - * man-machine interface including query languages and graphics,
 - * network architectures and protocols,
 - * algorithm design

This program is part of our continuing development of sophisticated software based reconnaissance systems.

For consideration, please send resume with salary history/requirements to GTE Sylvania, Dept. CB-41, 100 Ferguson Drive, Mountain View, CA 94042. U.S. citizenship requires. An equal opportunity employer. M/F/H.

GTE SYLVANIA

NEW FRONTIERS IN DATA PROCESSING

DP PROFESSIONALS



Step Into The Future at our

OPEN HOUSE

on Thursday, March 5th, 4PM to 9PM, & Saturday, March 7th, 10AM to 3PM.

Discover our exciting, innovative professional environment. Take the opportunity to meet one on one with our technical managers and discuss your career potential.

To remain at the forefront of the banking industry, Chemical Bank maintains the most sophisticated DP technology utilizing structured analysis and design and new testing methodologies for systems development. Our present capabilities include multiple IBM 3033's and 4300's, Honeywell DPS8 series, DEC, Datapoint, Hewlett-Packard and other minicomputers, along with IMS, CICS, TSO/SPF, VTAM, TCAM, SNA, a major on-line network operation and Time Sharing systems.

Excellent opportunities exist for you in the NYC area if you have at least 2 years' experience in any of the following: COBOL, Assembler, FORTRAN, PL/1, BASIC, Database and Telecommunications Internals. Positions exist for Programmer Analysts, Senior Programmer Analysts, Systems Programmers, Database Analysts, Capacity Planners and Performance and Tuning Analysts among many others.

Along with excellent growth potential, we offer competitive salaries and comprehensive benefits. So if you're seeking a career which will keep you at the forefront of the DP industry, we'll see you at our Open House.

Chemical Bank (13th floor)
55 Water St. (Wall St. area), New York, New York 10041

Please use our Old Slip entrance.

IRT 4 and 5 to Bowling Green station, walk 3 blocks south and take a left onto Water St. or IRT 2 and 3 to Wall St., walk 4 blocks south to Water St. or BMT RR to Whitehall St.

Refreshments will be served.

For a prompt interview, please bring your resume to the Open House. If you would like more information, please call Gail Rasenbaum at (212) 952-2241.

CHEMICAL BANK

equal opportunity employer m/f

PRINTER DESIGN ENGINEER

Datasouth, a rapidly expanding manufacturer of computer printer products, has an opportunity for a design engineer to work in the area of printer product development. The position requires a degreed engineer with 3-5 years experience in the design and manufacture of printer products, including at least 1 year with serial impact matrix printers.

This opportunity demands a highly motivated individual capable of independent judgement who is willing to accept the responsibility of taking a project from inception through completion. Background should include a working knowledge of electronic control systems design using LSI microprocessor techniques.

We are prepared to offer an attractive salary commensurate with your qualifications, excellent benefits and an opportunity for professional growth within our company. Our facility in Charlotte is within easy driving distance of the scenic Blue Ridge Mountains as well as popular resorts such as Myrtle Beach and Hilton Head Island.

For immediate consideration, please call or send salary history and resume in confidence to:

Datasouth Computer Corporation
4740-A Dwight Evans Road
Charlotte, NC 28210
704/523-8500

datasouth
computer corporation

PROGRAMMER/ANALYST

An evangelical Christian liberal arts college has immediate needs for an experienced self-motivated applications programmer/analyst. Experience in TOPS-20 COBOL required with RSTS BASIC PLUS desired for work on DEC equipment.

Send resumes to: Director of Personnel Dept. CW31P, Wheaton College, Wheaton, IL 60187. Wheaton College complies with federal and state requirements for non-discrimination in employment.



JACKSON STATE UNIVERSITY SYSTEMS ANALYST

We are seeking a results oriented individual to develop, implement and maintain systems in a centralized environment. Requirements include at least a bachelor's degree in Computer Science or six years of experience in project management, user relations, data gathering techniques or management information systems.

SYSTEMS AND PROGRAMMING MANAGER
Will direct the technical support activities; including systems programming, standards and methods, data base management, systems evaluation and management and technical library support services.

A bachelor's degree in Computer Science, two years experience in classification 41000 or 21000 (lead systems programming or lead systems analyst) and nine years of experience in data processing is required.

Please send your resume to Director of Personnel, Jackson State University, Jackson, Mississippi 39217.

EQUAL OPPORTUNITY/
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CONTRACT OPENINGS

ROCHESTER, N.Y.

SYSTEMS PROGRAMMERS

\$15-30 per hour, 1½ overtime
Bonus - per diem - holidays - vacation
Up to 3 years assignment at Fortune 100 corporations.
Must be eligible for high-level security clearance.

COLORADO & ARIZONA

SYSTEMS SOFTWARE DEVELOPER

Experience in Honeywell Level 66, GLOS, G/MAP.

PROGRAMMERS, SYSTEMS ANALYSTS, SYSTEMS PROGRAMMERS & SOFTWARE DEVELOPMENT

IBM, AMDAHL, Honeywell, COBOL, PL1, FORTRAN, OS, JCL, ASPEN.

All jobs offer highest rates, long term and overtime

Butler Service Group, Inc. A Butler International Co. (NYSE)

Call or rush resume to:

8000 S. Ulster
Suite 203
Englewood, CO 80111
303/779-4620

P.O. Box 7885
1425 Mt. Read Blvd.
Rochester, N.Y. 14606
716/647-9091

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DOS
CICS
COBOL**

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STAN ALLEN
**ROBERT HALF
OF TAMPA, INC.**
1311 N. Westshore Blvd.
Tampa, FL 33007
(813) 878-4191

**DATA PROCESSING
PROFESSIONALS**

**MAKE THE MOVE TO A COMPANY
THAT'S GOING PLACES.**

Because the only way to get to the top is to go with a company that's already there... a company like Stanadyne. We're a leading manufacturer of diesel fuel injection systems, and thanks to consistently producing some of the finest products in the industry today, we've recently moved into the elite ranks of the Fortune 500's. This is an exciting time for us, and frankly, the future has never looked better.

To meet our steadily increasing demands, we're enlarging our data processing facility. If you are a Programmer, Programmer Analyst or Systems Analyst with at least 2-4 years experience in a manufacturing environment, you should think about a Stanadyne career. We're presently on an IBM 370/148, but will soon be converting to a 4341 with COBOL, DL-1, CICS and DOS/VSE. The environment is fast-paced, but if you're the type of person we have in mind, that kind of challenge and excitement is precisely what you'll find so appealing.

In addition to the opportunity for personal and professional advancement, Stanadyne can offer you an excellent salary and generous company benefits plan. To learn more about the Stanadyne advantages, and to arrange a confidential interview, call Dick Ercole at (203) 525-0821 ext 2490, or send your resume complete with salary history and requirements.

Diesel Systems Group • Stanadyne, Inc.
92 Deerfield Road
Windsor, Connecticut 06095
We are an Equal Opportunity Employer M/F

Stanadyne diesel systems

**PROGRAMMER/ANALYST
EASTERN KENTUCKY
UNIVERSITY**

Staff position reporting to Director of new division within the University under auspices of Vice President for Public Service & Special Programs.

RESPONSIBILITIES = Perform system analysis and design, software recommendations, system testing, and implementation. Communicate with users and operations on program maintenance. Develop computer programs and documentation for user applications.

QUALIFICATIONS = High school diploma, two years experience in programming and/or analysis. Priority consideration will be given applicants with bachelor degree in appropriate discipline, experience as P/A in an IBM OS/VS environment, and implementing application system "packages".

Position now available. Forward resume and references to A.D. Allgar, Administrative, Systems & Programming, Eastern Kentucky University, Perkins 308, Richmond, KY 40475, by March 11, 1981.

An Equal Opportunity, Affirmative Action employer.

SYSTEMS PROGRAMMER

Ready For Diverse Challenges!

KMS Fusion's continuing involvement in the exciting energy conversion field has opened new opportunities for an experienced Systems Programmer looking for challenge and growth.

You'll be responsible for the installation and maintenance of major system software, primarily with the operation of the IBM 3031, and providing technical assistance to Operations and the user community.

You should have a BS degree or equivalent, working knowledge of I/O gens, IPO gens and SMP 4, plus four years experience in data processing--including two years in systems programming. United States Citizenship and Department of Energy Q Security Clearance eligibility are necessary.

We offer an excellent salary and benefits package, fine growth opportunities, and the pleasant alternative of living and working in the Ann Arbor area...a distinct benefit in its own right. Please forward your resume with salary history and expectations to:

Human Resources Department
Code 80-029

**.kms
fusion
inc.**
Box 1567
Ann Arbor, MI 48106

Equal Opportunity Employer M/F

SYSTEMS PROGRAMMER

Position available for programmer with at least 2 years experience in Univac 1100 assembler language. TIP, CMS and DMS helpful. Will do maintenance programming on EXEC 8 operating system plus write programs for real-time systems. Job will offer exposure to communication network development in an interactive real-time environment. Submit resume stating present salary level to: W.R. Fuller, Employment Manager

**Waterbury Hospital
Health Center**
64 Robbins Street
Waterbury, Connecticut 06720
An Equal Opportunity Employer M/F

**Director, Registrar
Data Systems
University of Florida**

The position requires an innovative professional to manage the section of the Registrar's Office. The selected candidate will be required to supervise 10 programmer/analysts and a data entry staff of seven. The individual should have solid background in management and administrative skills with a preference in higher education emphasizing student records. Knowledge in state-of-the-art techniques in CICS, Teleprocessing and Distributive Processing as it relates to application programming is a must. This position reports directly to the Associate University Registrar and has a pay range of \$19-\$25,000. Forward resume and salary history in strict confidence by March 23, 1981 to George P. Bradley, Employment Manager, 337 Stadium, University of Florida, Gainesville, FL 32611.

Equal Employment Opportunity/
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**Judge
For Yourself**

Technical Instructors to \$32K

Positions for Hardware, Software and Process Control Instructors are available at all levels to teach customers, Customer Engineers and Field Service Engineers. Must have a minimum of 1 year experience in platform instruction.

Technical Writers to \$32K

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Contact Rhonda Schuster



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Requires 2 to 5 years design and programming experience with on-line systems. Must have knowledge of COBOL, CICS, and DL/1.

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2 years experience. Must have knowledge of COBOL and ASSEMBLER. Analyzes systems related to financial institutions. Designs & implements computer systems for conversion from manual procedures as well as enhancement of existing computer systems to ensure efficient operation. \$482.00 per week to work 35 hours/5 days/week. **PLEASE SEND RESUMES TO: Acsis, Inc., 120 Broadway, New York, N.Y. 10005.**

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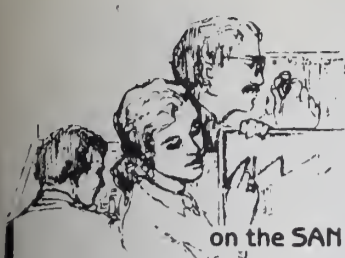
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The position can pay from \$30,000-\$37,000 annually for a qualified candidate. Requirements include a master's degree in a field relating to computing or a bachelor's degree with additional experience. At least six years experience in administrative data processing are required, two of which must be at the managerial level. IBM software experience is a plus. NMSU has a hardware center with an AMDAHL V/5, and IBM 4341, and over 300 terminals.

Deadline for applications: March 15, 1981. Send resume with letter of application to Dr. Joseph R. Denk, Director of Computer Center, NMSU Computer Center, Box 3AT, Las Cruces, NM 88001.

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Applicants should be computer professionals with broad knowledge and experience in information systems development, with an interest in the social sciences. Applicants for the senior position should desirably have postgraduate qualifications and teaching experience. Familiarity with the following areas would be advantageous: client-centered design, data base management, integrated systems, distributed systems, simulation, social implications, statistics, and behavioral science.

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Intending applicants should first contact-

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Regarding the form of application.

Closing date for applications is 31 March 1981.

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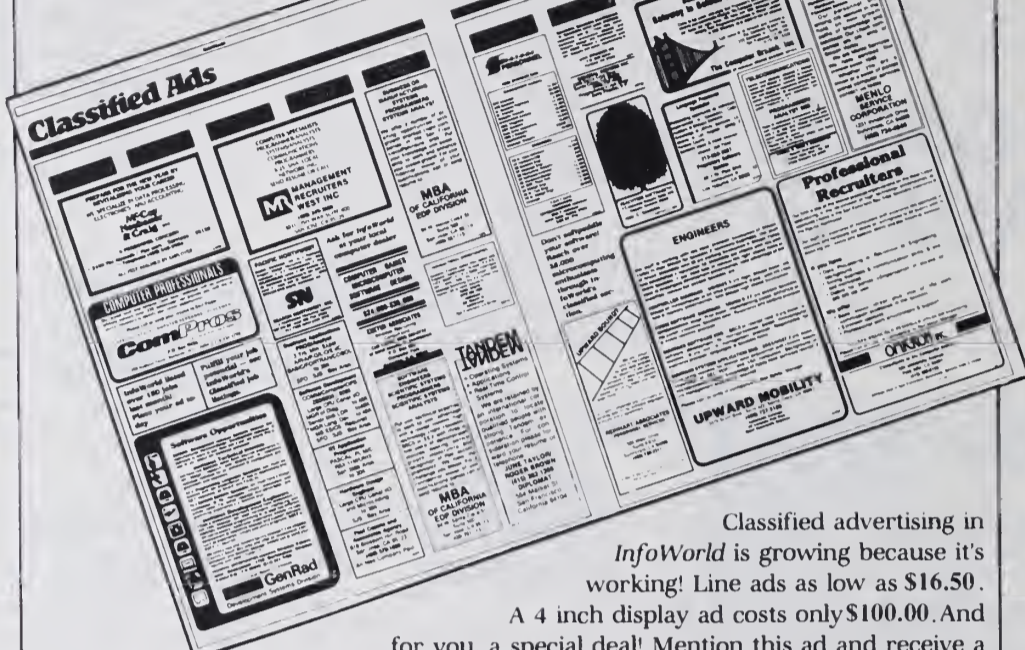
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2 years experience or 2 years in Programming Bachelor's Degree in any science. Must have knowledge of COBOL. Analyze banking & business procedures to redefine data operations to programmable form. Details logical & mathematical operations to be performed by various units & programs. Evaluates existing systems & develops new systems to improve production or workflow as required. \$482.00 per week to work 35 hours/5 days/week. PLEASE SEND RESUMES TO: Acsis, Inc., 120 Broadway, New York, N.Y. 10005.

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Department of Math and Computer Science
Millersville State College
Millersville, PA 17551

Millersville State College earnestly seeks and is eager to receive applications from minority and women candidates.

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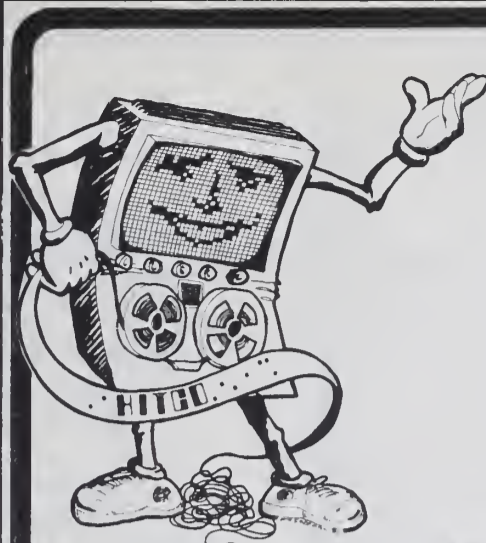
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SYSTEMS ANALYST

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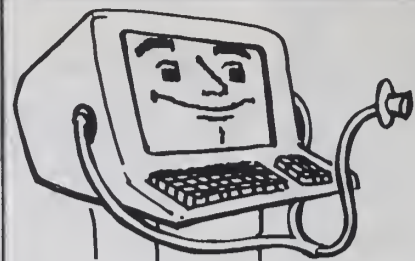
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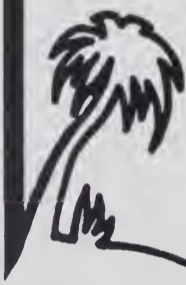


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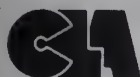
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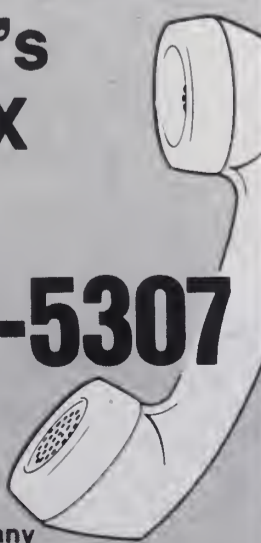
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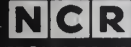
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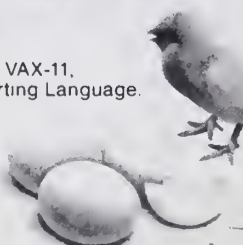
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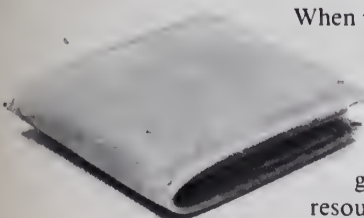
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ADVERTISERS' INDEX

Acme Visible Records.....	12-13
AFIPS.....	39
Allen Services Corp.....	43
American Computer Group.....	35
American Key Data.....	14
American Terminal & Leasing.....	48
Ardent Computer Products.....	8
Association of Computer Users.....	64
Authorized Terminal Distributors.....	52
John Beall.....	63
Boeing Computer Svcs.....	34
Brian Productions.....	20
Alex Brown, Inc.....	72
Byte Publications, Inc.....	65
Capex Corp.....	7
Carterfone.....	18
Compumart Corp.....	18
Computer Programming Assoc.....	68
Computer Sciences Corp.....	22-23
Computer Terminal Leasing.....	57
Control Concepts Corp.....	25
Cullinane Database Systems, Inc.....	31
Dacoterm.....	26
Data Access Systems.....	61
DataBase Management.....	16
Datacorp.....	73
Datamedia Corp.....	29
Datapoint.....	60
Data Rentals/Sales.....	12
Dataware, Inc.....	47
Deltak.....	17
Norm deNardi Enterprises.....	64
Dexel Systems Corporation.....	34
Digital Associates.....	62
Digital Equipment Corp./Terminals.....	44-45
Digital Equipment Corp./tpg/npm.....	70-71
Digital Microsystems.....	74
Dorlen Products.....	8
Eastman Kodak.....	75
Enterprise Technology Corp.....	47
Formation.....	42
Harris Data Service.....	26
Hewlett-Packard.....	19
Hughes Aircraft.....	28
IBM/DPD.....	58-59
ICE, Inc.....	13
Imperial Technology.....	38
Informatics/Implementation Systems.....	14
Information Concepts.....	26
Insac Software, Inc.....	5
Invitational Systems Conference.....	40
Local Data.....	30
Locom Corp.....	35
MacMillan Book Clubs Inc.....	33
Management Science America.....	114
Micro Management Systems, Inc.....	58
Minicomputer Business Applications.....	67
Morrow Designs.....	20
Multiple Technology.....	68
Mike Murach & Associates.....	9
B.I. Moyle.....	42
National Computer Communications.....	53
NCA.....	32
Newcorp Products.....	16
NYG, Inc.....	47
O'Neill Data Systems.....	69
Ken Orr.....	76
Pacific Mountain States Corp.....	26
Questronics.....	4
Qwikterm.....	30
QXY.....	34
Rubin Engineering.....	32
Science Accessories.....	48
SDA.....	54, 55
Signal Technology.....	6
Software International.....	56
Software Module Marketing.....	41
Solutions, Inc.....	18
Sun Information Services Co.....	24
Tab Products.....	21
Telex.....	46
University Computing Co.....	51
Verhoef Information Packages, Inc.....	41, 72
Visual Technology.....	27
Votrax.....	25
Western Union.....	62
Westwood Assoc.....	47
Whitlow Computer Systems.....	3
Wolfe Computer Aptitude Testing.....	59
Yourdon.....	15

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